THE ENGINEERING AND MINING JOURNAL

COAL

Entered at the Post-Office of New York, N. Y., as Second-Class Mail Matter.

VOL. L. NOVEMBER 8. No. 19.

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ROSSITER W. RAYMOND Ph.D., M.E. Special Contributor.

Cable Address: "Rothwell, New York." Use A. B. C. Code, Fourth Edition

London: 76 Finsbury Pavement, London, E. C., Mr. Thomas B. Provis, Civil and Mining Engineer, Manager.

Mexico: Mr. R. E. Chism, M. E., Callejon Espiritu Santo No. 4, City of Mexico.

Peru, S. A.: Mr. John Newton, No. 2 Calle Constitucion, Calla.

Australasia: Messrs. Moffat, Judd & Co., 11 Bridge street, Sydney, N. S. W.; Mr. W. Forster, 56 Elizabeth street, Melbourne, Victoria; Messrs. J. T. Partridge & Co., 134 Manchester street, Christchurch, New Zealand.

SUBSCRIPTION PRICE, including postage:

Weekly Edition (which includes the Export Edition), for the United States, Mexico and Canada, $4 per annum; $2.25 for six months; all other countries in the Postal Union, $5.

Monthly Export Edition, all countries, $2.50 gold value per annum.

REMITTANCES should always be made by Bank Drafts, Post-Office Orders or Express Money Orders on New York, payable to THE SCIENTIFIC PUBLISHING CO. All payments must be made in advance.

THE SCIENTIFIC PUBLISHING CO., Publishers,

SOPHIA BRAEUNLICH, Sec'y & Treas. R. P. ROTHWELL. Pres. and Gen'l Manager.

P.O. Box 1833. 27 Park Place, New York.

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IT is to be hoped that, enlightened as to the popular feeling on the subject of high tariffs by the vote of Tuesday, there will be a prompt modification in the ruling, which even since the MCKINLEY bill passed has actually demanded a tariff of $30 a ton on all lead ore, *whatever its contents of lead*, if the market value of the lead in the same exceeded that of the silver.

SIXTY THOUSAND EIGHT HUNDRED tons of clean shipping coal or, adding the waste, culm, etc., a total of, say, 79,000 tons of material hoisted from a single shaft in the month of October is, we believe, the greatest record of any monthly work yet done under similar conditions. This was the work in October of the Nottingham colliery of the Lehigh & Wilkesbarre Coal Company, in the Wyoming Valley, Pa. This mine has one hoisting shaft, double hoistway, lifting one car at a time, and it worked 10 hours a day. Three hundred tons an *hour* raised from a single shaft is certainly pretty lively work. Who can beat it?

THE price of Lake copper has now been held at 17 cents for some months and this effect of the price is showing itself. In the early summer the consumption of copper was so active that not only did it exceed our home production, but it drew heavily on the stocks of the old French syndicate which still remained. As the price advanced the consumption appears to have been checked, and it is certain now that while large, it is much less active than it was six months ago. The syndicate stocks are exhausted, the production of the mines, with the exception of the Calumet & Hecla, which is said to be producing over 8,000,000 pounds a month, has not materially increased, yet now the price is a little weaker; some Lake copper has undoubtedly been sold at less than 17 cents, and the chief broker of the Lake companies is said to be inviting orders, which the companies can now fill. It is also said that some of the Lake companies are accumulating quite important stocks. The meaning of this is apparently, that 17 cents is too high a price; it is restricting consumption and will divert the trade into other directions. The price of copper has probably reached its maximum and is likely to decline after the first of January, when all "understandings" will terminate. Naturally, the effect of the lower prices will be to depress somewhat copper stocks, except in cases where increasing production can compensate for lower prices.

THE ENEMIES OF PROTECTION.

THE elections which took place in many of the States and Territories on the 4th inst. have proved a veritable cyclone to those who have been converting protection into an instrument of oppression and corruption, and who have been building up dams against the commercial progress of the country. The policy which the ENGINEERING AND MINING JOURNAL has maintained to be not only for the benefit of the country at large, but in the interest of a rational and honest system of protection, has been indorsed more promptly and emphatically than could have been expected.

In our last week's issue we said: "The danger of the present policy of protection-run-mad is that the people will become utterly disgusted with a system that calls not only for a tax to inaugurate a new industry, but for a constantly increasing tax through all succeeding years to make it more and more profitable. It becomes a veritable vampire that has attached itself to the tax payer, and is ever absorbing his life blood. Finally, enraged at this abuse of its generosity, the people will suddenly cut off all tariff, and the pampered industries, wholly unprepared to meet a condition of affairs that they would have adapted themselves to under a gradually diminishing tariff, will unquestionably suffer great disaster. Those who are advocating such examples of protection as the MCKINLEY bill are the worst enemies of the system, and assume a responsibility that will certainly overwhelm them."

Assuredly they have been "overwhelmed" since these words were written, and the "danger" of the present policy of protection-run-mad has become more apparent than it was. The effect of this election, in which tariff reform has swept the country, will certainly be the early remodeling of the MCKINLEY bill, for after this emphatic warning no party would dream of going into a presidential election with that fatal millstone around its neck. If it did, the party would never be heard of again.

It is therefore certain that the tariff question, which has been a disturbing and injurious element in business during the whole of the past 18 months, is not yet settled, and will come up again in the next Congress, and that changes will be made in the direction of freer commercial intercourse with the world, when it is probable that raw materials will be admitted free. We may even see an early modification of such treasury "rulings" as have largely prevented the importation of lead ores from Mexico with the effects, clearly foreshown in the ENGINEERING AND MINING JOURNAL, of building up a rival Mexican metallurgical industry, partly with American capital, and of obliging us to import pig lead from Europe instead of lead ore from Mexico and Canada, thus giving the profit on reduction to the English and Spaniards.

This kind of protection which protects and fosters the establishment of rival foreign industries at the expense of our own taxpayers, will hereafter be much less popular than it has been of late.

The freer admittance of all raw materials will, no doubt, be permitted, and the burdensome taxes on the articles in common use by the poor will be lessened. The danger is approaching that the change may be too sudden and too great. The ENGINEERING AND MINING JOURNAL will continue to advocate moderation and justice in reductions of tariffs as it has in increasing them. What is wanted is a just and enlightened policy that will enable our industries to prepare themselves for the inevitable necessity for widening their markets, and competing in those where they have no protection to help them.

THE COMSTOCK SCANDAL.

In our issue of October 25th, page 473, we referred to a letter from the Director of the Mint as having been published in that issue. Through the inscrutable operation of that imp, the P. D., the letter referred to was lost, but its substance may now be given as follows:

The Director of the Mint states that at the request of certain stockholders of Comstock mines he sent an impartial man to Carson, instructing him to confer with the attorney of the stockholders and get any points he could and investigate the charge that the officials of the Carson mint were in collusion with the Comstock mill ring.

This gentleman reported, after a full and thorough examination, that there was not the slightest evidence of any collusion or impropriety upon the part of the Carson mint officials, and that not one of the persons to whom the attorney referred him could or would state a single circumstance showing any impropriety on the part of the mint officers.

Moreover, the Director of the Mint writes that he has not only given the stockholders an abstract of every deposit of bullion, name of depositor, etc., but he has instructed the superintendent of the mint at Carson to afford them free access to the original books and papers of the mint, and afford them every facility for tracing the deposits.

This is the substance of the director's communication to the ENGINEERING AND MINING JOURNAL, and it fully justifies our confidence in the mint administration which has always been above suspicion, and which, under the charge of Mr. E. O. LEECH, is worthy of the fullest confidence. The Director of the Mint, of course, has nothing to say of the merits of the controversy between the mine stockholders and the mill ring, but he has shown such readiness to place the mint records at the disposition of the stockholders that these should recognize their obligations to him and his worthy course in this matter.

So far as the mill ring is concerned, there can be no question about its perversity. It has for many years deliberately swindled the mine stockholders. When prosecuted some years ago it compromised and bought off the prosecutors, and the evidence of its crookedness since then is weighty and convincing. Now, with free access to the records of the mints at Carson and San Francisco, the stockholders should be able to advance a long step, and trace the destination of the bullion produced from the Comstock, which they claim far exceeded the amount credited to the mines by their several boards of "dummy" directors.

THE BAXERES UNIVERSAL FURNACE.

A thoughtless friend has handed us an article from an English exchange (an abstract appears on another page) giving an account of the new "Universal Furnace," invented by "Dr. J. BAXERES, a well-known metallurgist of Oporto," and has suggested that this account would furnish a good subject for a humorous review. Reflection would have convinced him that when a thing is in itself so ridiculous and absurd as to command the instant laughter of all beholders, the attempt to *make* fun of it is quite superfluous. You cannot talk to people while they are laughing; and it would be particularly foolish to take that time for explaining to them *why* they laugh.

The mere contemplation of the well-known metallurgist of Oporto with his superior economical method of smelting and refining at one operation any kind of mineral, by the simple and cheap process of trituration, addition of oxides, carbonates, nitrates, etc., etc., and fusion in iron or other refractory crucibles by means of circular involving flames, ends all satirical comment. Whoever does not at once perceive the joke could not be made to perceive it. We shall not try to be funny at the expense of Dr. BAXERES. He is funny enough for two.

On the other hand, we are rather tempted by this new exhibition of a familiar phenomenon to moralize a little, with a touch of pity in our philosophy. We have had metallurgy "revolutionized" so many times that we know what ails the inventor who fancies he has turned upside-down the established results of experience. He is simply standing on his own head. And the interesting inquiry is, Why do so many of them take that attitude?

Our answer may be found in the fact that it is to the average public an impressive attitude. It attracts attention; it confers distinction; it commands popular admiration. Nothing can get the aid of capital, for instance, so easily as a novelty which defies the judgment of all the experts. Every real advance of discovery is attended with a cloud of these dazzling surprises; and the public bewildered by the great things already achieved, which it does not understand, seems to think that whatever is astonishing must be authentic, because so many authentic things are astonishing. To be "stranger than fiction" is accepted as a characteristic by which truth may be recognized.

The trouble, both with the inventor (unless he be a rogue) and his dupes (whether he be a rogue or not), is simply lack of knowledge—such knowledge as produces a rational faith in science and scientific experts. A detailed acquaintance with any such scientific branch as metallurgy, for instance, is, however, not to be expected of men not trained to that branch. We beg leave, therefore, to offer a simple principle by which even the inexpert may safely judge the claims of many "revolutionary" novelties.

A *panacea* is always a quack medicine; and when any new device is trumpeted as able to "do anything" in a given department, it is safe to conclude that the claim is founded in ignorance or falsehood.

As a corollary to this proposition, it may be observed that most attempts in smelting, concentration, etc., to produce the final result by one operation, instead of being steps in advance, are retrogressions toward barbaric methods. Rich "headings," barren "tailings" and no "middlings," or refined metal and worthless slag at one smelting are not the characteristics of improved processes.

Hence, even if the description of Dr. BAXERES' "Universal Furnace" and its use did not so clearly reveal as it does the very limited and doubtful utility of the invention, the name he has given it would condemn it and him. A real metallurgist would be ashamed of such a name.

GLÜCKLICHE REISE.

Sons of German Fatherland!
Our kindred of the elder line,
Whose ancient glories, freshly fanned,
In pristine vigor flame and shine!

True brethren still, and our allies
In that great battle we must wage,
Till round the world unclouded skies
Look down upon the Golden Age.

The shore that late our welcome heard
Now hears us say farewell again—
Nay, not farewell! You have a word
Our lips prefer—*Auf Wiedersehen!*

If, when upon old German ground
You pledge old friends in German wine,
New echoes from your glasses sound,
Know that the Hudson greets the Rhine.

R. W. R.

GOOD-BYE.

What! you're already going away?
Where is that ancient virtue, then,
We used to hear so much of, pray—
The "staying power" of Englishmen?

Your sires and ours were different stuff;
Th-y didn't cleave the ocean foam
For one short month, and cry "Enough!"
And set their yearning sails for home!

Well, Science has made ocean trips
So trivial that you came with ease;
And now, alas, too many ships
Invite you to re-cross the seas.

Yet we take comfort, since we know,
Whatever else remain unknown,
We cannot lose you now; for though
You sail away, you'll not be gone.

When folks in such a hurry pack,
They make mistakes; and you will find
It is our hearts you carry back,
And yours that have been left behind!

But both shall gain, and neither lose.
Meum and *Tuum*, once apart,
In Friendship's furnace simply fuse
To form one homogeneous heart.

Such be our union, ductile, strong,
Well-tempered, proof to shot or shell,
Elastic, beautiful, as long
As steel endures!
Dear friends, *farewell!*

R. W. R.

BOOKS RECEIVED.

[In sending books for notice, will publishers, for their own sake and that of book buyers, give the retail price? These notices do not supersede review in another page of the Journal.]

Jahrbuch fur das Berg- und Huttenwesen im Konigreiche Sachsen auf das Jahr 1890. By C. Menzel, K. T. Bergamtsrath. Published by Craf & Gerlach, Freiberg-Sachsen. Pages, 246. Illustrated. Price, 8 marks.

Proceedings of the United States National Museum, Smithsonian Institution, Volume XII., 1889. By S. P. Langley, Secretary. Printed by the Government, Washington, D. C. 1890. Pages, 686. Illustrated.

Statistics of Railways in the United States. For the year ending June 30 1889. Published by the Government, Washington, D. C. 1890. Pages, 566.

The Metallurgy of Silver, Gold and Mercury in the United States. Vol. II. Gold and Mercury. By Thomas Egleston, LL.D. Published by John Wiley & Son, New York, 1890. Pages, 920. Price, $7.50. Illustrated,

Transactions of the American Institute of Mining Engineers. Vol. VIII., May, 1889, to February, 1890. Published by the Institute, New York, 1890. Pages 940. Illustrated with maps and engravings.

Twenty-first Annual Report of the State Board of Health of Massachusetts. Published by the State, Boston. 1890. Pages, 457. With map.

MAPS RECEIVED.

Map of the Joplin Mining District, Missouri. Compiled and revised by J. R. Holibaugh, Mining Engineer, Joplin, Mo. August, 1890.

CORRESPONDENCE.

We invite correspondence upon matters of interest to the industries of mining and metallurgy. Communications should invariably be accompanied with the name and address of the writer. Initials only will be published when so requested.
All letters should be addressed to the MANAGING EDITOR.
We do not hold ourselves responsible for the opinions expressed by correspondents.

The Silver Production of Germany.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Looking over the statement of the world's gold and silver production the ENGINEERING AND MINING JOURNAL gives in No. 1. page 13, I find a mistake of great importance referring to the silver production of Germany. Knowing the exactness and high value of your statements, I do not hesitate to call your attention to that point. You give the following production of silver from German mines:

	1885.	1886.	1887.	1888.
Kilograms.....	24 567	25,650	23,929	23,412

whereas the production of silver from German mines for 1888 was:

	Kilograms.
Mannsfeld district, 469,747 tons of ore, with 0·187 kilograms silver, produced.....	78,996
Rammelsberg produced.....	6,795
Rhein Nassau district (estimated) produced.....	60,000
Clausthal district (estimated) produced.....	30,000
Saxony, 30,090 tons of ore, with 0·905 kilograms of silver, produced.....	27,000
Total silver production from German mines.....	272,791

The total silver production of German smelting works was:

	1885.	1886.	1887.	1888.	1889.
Kilograms.....	222,000	247,000	265,000	291,000	288,000

LA PUEBLA DE GUYMAN, Spain, October 18, 1890. BRUNO WETZIG.

The Darby Process of Recarburization.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Permit me to say a few words in regard to the above paper, published in your issue of the 25th inst.

From the data contained in that paper I note that for filtering converter steel 60 pounds of coke have to be used to replace the carbon contained in 600 pounds of spiegeleisen, and that for filtering open-hearth steel 50 pounds of coke replace 250 of spiegeleisen. Estimating the carbon in the spiegel at 5 per cent., we have: 60 pounds coke for 30 pounds of carbon contained in the spiegel, and for open-hearth steel 50 pounds of coke for 12½ pounds of spiegel-carbon. Hence, it seems that I had a pretty good margin left in claiming, in your issue of July 12th, that 1 per cent. of filter-carbon cannot yield more than two-thirds of 1 per cent. of combined carbon. It seems, also, that I did not exaggerate in claiming that the steel must become sensibly oxidized during its flow from furnace to filter, considering that in passing out of the filter and into the ladle (Fig. 2) it could become so badly oxidized that "the ingots fell to pieces in the rolls."

The percentage of increase of carburization, as shown in tables I., II., IV. and V., keeps remarkably close to the "practical limit" (about 0·2 per cent.), which I predicted in your issue of July 26th.

As to the practicability of a much higher enrichment, such as that noted in table III., viz:

After carburizing.....	0·804 per cent. C.
Before "	0·070 " "
Increase.....	0·734 per cent.

I am still a "doubting Thomas."

In the absence of specific details, I have to make the best I can of the figures that are furnished in the paper referred to. Assuming that the steel, containing the above percentage of carbon, had been filtered in the usual way, viz., one-third of the tap passing through the filter and two-thirds flowing unfiltered into the ladle, I calculate as follows:

Twenty thousand pounds of steel require for, say, 0·2 to 0·25 per cent. carburization about 100 pounds of coke, and for 0·734 per cent. about 300 pounds of coke. This quantity has to be mixed with about one-third of the steel—say with 6666·6+ pounds. The volume-weight of the coke, as compared with that of the molten steel that has to absorb it, is about 5 : 1, and the volumes of the respective parts are, therefore, in the proportion of $5 \times 300 = 1{,}500 : 6666+$. Hence, over one-fifth of a cubic foot of coke has to be added to each cubic foot of steel that is treated with coke, and as that steel has to be enriched with $3 \times 0{\cdot}734 = 2^{2}$ per cent. of carbon, each cubic foot has to absorb about ten pounds of it, the one-third of the change has to absorb $3 \times 0{\cdot}734 \times 6666{\cdot}+ = 147$ pounds of carbon out of the 300 pounds of coke, and the remainder of the latter is wasted or burned up in some way or other *without having any further effect on the metal!*

According to the theory "that carbon dissolves in molten iron," this may all be as it should be, especially if that theory should also involve that the absorbed carbon—if not perfectly digested at once—has a chance to rearrange itself properly, in the cooling ingots, by *molecular migration.*

But if the carbon has to combine in the indirect manner which I consider to be the only possible mode of carburization, then there must be a hitch somewhere, either in my *pro forma* calculation or in the practicability of the procedure—possibly in both. A. D. ELBERS.

HOBOKEN, N. J., Oct. 30, 1890.

The Manufacture of Basic Steel in the South.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: During the recent visit of the foreign iron masters the greatest interest was shown in the possibility of making good basic steel here at a good profit.

This brings me, by a somewhat roundabout way, to the main excuse for the existence of this letter.

Open-hearth steel in the South is on its legs, and can now demonstrate to its friends no less than to its opponents whether it has come to stay or not. At Birmingham and at Chattanooga are furnaces now in operation, and at Fort Payne the basic open hearth is nearly ready to begin work. This is a good beginning and no one can help wishing the best luck to the owners and managers. The iron so far used has been a white iron of about 1 per cent. silicon, although some of it will run less than this, from 0·40 to 0·60 per cent. phosphorus and from 0·10 to 0·30 per cent. sulphur. Of course an iron that runs to 0·30 per cent. sulphur is not so easily worked as a 0·10 or a 0·20, but the white iron here will sometimes run in sulphur to the higher figure.

I have at no time doubted the possibility of making good basic steel here from the pig of this district, nor the possibility of making it at a good profit, provided the furnace men will furnish the metal. The hitch will be here, not in the adaptability of this pig to the basic open-hearth process, but in the adaptability of the furnace men to the new order of things. As I have pointed out in these columns before, the furnace men are not here for their health, but to make money, and to make it as easily as possible with the least expenditure of time and money. If they can make more money on foundry and forge and mill irons than on iron of lower grade, they will continue to make those irons. The manufacture of steel is doubtless a good thing, and would absorb a kind of iron for which there is at times but a light demand. But as long as the furnaces are doing well enough on the other grades they will not bother with such iron as is best adapted to the basic open hearth. The proof of this, if proof be needed for such a self-evident proposition, is to be found in the fact that some of the furnaces have refused to make iron for the steel works to order, claiming, what indeed is true, that they ought not to alter the running of their furnaces merely to supply the small demand for the kind of metal the steel men want. When it is made apparent to the furnace men that there is a good and steady demand for the metal wanted, it will be made, but not until then. What the steel men want is a chill cast white iron that will not run over 1 per cent. silicon nor over 0·15 per cent. sulphur. I say chill cast, because the slagging off of the one per cent. of sand usually adhering to sand cast iron is a matter of considerable importance to the steel maker, and particularly so when he is using magnesia bricks that cost 36 cents each. And then again the bottom in a basic open hearth is no friend to silica in any shape or form, and the less it has to do with this material the better for all concerned. Chill cast iron cannot now be had here, nor is it likely that any one will go to the expense and trouble of making it until a steady market is to be had.

It is an old saying that in the matter of education the supply must precede the demand. The same may be true in steel making, but it is more reasonable to think that in this as in most other matters the demand will create the supply. When the actual demand for basic open-hearth pig becomes great enough here to warrant the furnace men in catering to it, then we will have the steel industry established on a firm foundation. Up to this time, however, it must be said that we have succeeded in the preliminary experiments very well indeed, but have not gone much beyond them. That the outlook is very promising no one can deny, and one might go farther and say that steel can be made here as cheaply as, perhaps more cheaply than, at any other point in the South and that the quality of metal producible would be all that any one could ask. The actual state of affairs in Alabama now is that we are making about 25 tons of first-rate basic open-hearth steel per day at Birmingham, and that another furnace is building at Fort Payne to be ready within 60 or 90 days.

I do not know of a better outlook in the whole range of industrial enterprises than that of the manufacture of basic open-hearth steel in the South, either in Tennessee or Alabama. It is, I think, soon to be one of the most important developments in this country of rapid growth and will attain within the next ten years the same position which pig iron has reached within the last ten. WM. B. PHILLIPS.

BIRMINGHAM, Ala., Oct. 31.

Russell Lixiviation versus Amalgamation.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In a recent issue of the ENGINEERING AND MINING JOURNAL Mr. C. A. Stetefeldt states that up to the present time, out of eight trials given the Russell process six have proven "financial" failures, and that in only two mills the process is now used, leaving us under the impression that, at least, in these two this best-pushed of all processes has been a success.

The Ledras mill, one of the two in which the Russell process is being used, has not been heard of publicly, but privately I have it from two trustworthy parties that the Russell "improvement" is not successful financially nor metallurgically, and that the improvement noted at the time of the introduction was not due to the Russell process.

The degree of success at the Marsac mill will be seen by the following extracts from the official reports: It seems, from the report of the mill superintendent to the directors of the Daly Mining Company for the year 1888, that, after exhaustive trials on a large scale, the Marsac mill was ready to start its lixiviating plant on January 1st, 1889 (page 10, An. Rep. Daly Mg. Co. for 1888). To show that the process probably had every chance of success from the superintendent, a matter naturally of the greatest moment for the successful installation of a new or any other process, I will quote the final sentence of his report. It shows not only friendliness but distinct bias in favor of the process, which quality, I admit, is permissible under the circumstances, if coupled with honesty, as in this case.

"The present leaching department will do most of the work heretofore performed by the pans. No quicksilver consumed, no castings to be replaced, and no 70 H. P. engine to furnish power are the striking features in which it differs from the old pan process. From the results attained by the Russell process in the preliminary charges it is safe to predict from its use at the Marsac an increase in the per cent. of silver extracted from the ore at a considerable diminution in the cost per ton for milling."

And now a quotation from the same superintendent's report a year later, Jan. 1st, 1890, in his report to the directors for the year 1889. Very much meeker, but still hopeful:

"During the past year about one-third of our roasted pulp has been treated in the pan room, and the remainder in the leaching department," etc. Then after a somewhat daring attempt at explanation for the clear failure of the process so far, financially and metallurgically, as compared with amalgamation, he shows his still continuing friendliness to the process by saying:

"The addition of two new vats to the leaching department renders it possible to treat all the roasted pulp by leaching, and during the coming year that method will be the only one used.

"This will enable us to obtain a correct comparison between the two

processes, and to demonstrate fully the superiority which our present system (Russell) possesses over the old one (amalgamation)."

Now in a "deadly parallel column," let me place the salient results and some details of the trials of "Russell versus Amalgamation." The figures are taken from the directors' reports of the operation at the Daly mine and mill for 1888 and 1889:

MARSAC MILL.

	1888. Amalgamation.	1889. ⅔ Russell, ⅓ amalgamation.
Tons of ore worked	22,907·4	23,420·00
Fuel consumed, coal tons	2,986·	3,022·00
" wood, cords	5,279	5,480
" cost	$1.66 per ton.*	$1.91 per ton.*
Average percentage saved	90·7	88·00
Reduction cost	$6.40 per ton.	$7.02 per ton.
Total operating expenses	18.44 "	16.40 "

*Approximated by M. A.

So that in the face of the fact that the operating expenses were reduced $2.04 per ton, or more than 11 per cent., presumably by reason of better management, reduction in prices of supplies, cost of mining, etc., the cost of milling, instead of sympathizing with this splendid showing, rose 62c. per ton, or nearly 10 per cent.

To sum up: It has cost 62 cents per ton *more* to extract 2 per cent. *less* by the Marsac mill in 1889 than it did in 1888, *ceteris paribus*, and we must ascribe to the Russell process this bad showing. Note also that for the year 1889 the Ontario Mill, on exactly the same ore, same vein, same value, same management, extracted 90·9 per cent. of the assay value by amalgamation. Please also note that the Ontario, owned by the same people as the Daly, does not and never did use the Russell process, a fact never clearly accentuated in Russell literature.

Meanwhile the eighth total financial as well as metallurgical failure of the "improvement" of a really good and simple process, the original Patera, is awaited by metallurgists in general, and in particular by

A MUSCULAR AMALGAMATOR.

How the Consolidated California and Virginia Mining Company is Managed.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I sent you some days ago certain questions [published in ENGINEERING AND MINING JOURNAL October 25th] propounded to the directors of the Consolidated California and Virginia Mining Company by a stockholder, and to which not one of the directors could make reply or give any information. They voted to refer them to the superintendent of the mine, Mr. D. B. Lymon, and he has now made reply as follows. I repeat the questions and append the answer to each:

1. Does the Comstock Mill and Mining Company mill the ores of this company? *Ans.* Yes.

2. Do you take or have made car sample assays of all ores delivered by you to the milling company before it is milled? *Ans.* Yes; railroad car sample assays.

3. Do you keep these car sample assays? *Ans.* Yes; at the company's assay office in Virginia City.

4. Does the milling company deliver the bullion to this company at the San Francisco office or the mine?

5. Where is the gold and silver in the bullion separated? *Ans.* At the Carson Mint, of the bullion shipped to that mint. Has the company a refinery attached to the assay office in Virginia City? *Ans.* No.

6. Does the company deposit bullion at the Carson Mint? *Ans.* Yes. If so, in whose name is it deposited? *Ans.* In the name of the Consolidated California and Virginia Mining Company.

7. Does the company sell any bullion to the Carson Mint? If so, who does the selling for the company? *Ans.* Yes, the transaction of sale is between the superintendent of the mine and the Director of the Mint.

8. Does the company ship bullion by Wells, Fargo & Co.'s express? *Ans.* Yes.

9. Does the company ship bullion in any other way besides Wells, Fargo & Co.'s express? *Ans.* No.

10. To whom is the bullion shipped and where? *Ans.* To the superintendent of the Carson Mint, Carson, and to the company's office in San Francisco. All the bullion is shipped from the superintendent's office in the form of bars, and of all the bullion produced during the past official year there was shipped to the Carson Mint $1,403,639.34, and to the office in San Francisco $866,318.44; total bullion for the year, $2,269,957.78.

11. What becomes of the tailings, slimes and residue from the ore milled? *Ans. They are retained by the company milling the ore as its own* property, according to the usage which has always governed milling contracts on the Comstock lode, the party milling guaranteeing to return not less than a stipulated per cent. of the assay value of the ore worked.

One may well ask: are not the directors of a company trustees for the stockholders, and is it not criminal neglect of their trust to be ignorant of how the property for which they are trustees is administered? Here is a property that produces and disburses over two and a quarter million dollars in twelve months, representing four and one half million dollars in income and outgo, and the so-called directors are compelled to send to the superintendent to ascertain what becomes of the bullion that is produced. The fact is the directors, though none the less criminal on that account, are mere dummies for the milling magnates, Senator Jones, Hobart, Hayward and others, who control the mines through proxies given by "trustees," who frequently do not own, and never did own, a share in the stock of the mine.

Why are not the car sample assays made public? You have received already some examples of the variation between these and pulp assays at the Hale & Norcross mine; no doubt the same difference exists here.

Another point of interest to shareholders in the annual election of the C. C. & V. M. Co., was the absence of certificates of stock. There were 172,695 shares represented, of which 280 shares were stock and the balance proxies. The secretary of the company had no stock to consider. There was no list of stockholders called. The secretary produced his little wad of proxies and the ballots already prepared with the names of the trustees of the preceding year, and handled them out to these same trustees, and these same trustees voted for themselves for trustees for the coming year.

It may be interesting to your readers and to stockholders to understand the situation. The Comstock Mill and Mining Company, mentioned in the questions asked the directors of the Consolidated California and Virginia Mining Company, is an incorporation under the laws of the State of Nevada. The Consolidated California and Virginia Mining Company and other mines are incorporations under the laws of California. In case of trouble arising between stockholders and mill companies (the latter being incorporated in the "rotten borough" of Nevada, which has about 40,000 inhabitants and 10,000 or 12,000 voters), a conflict of jurisdiction between the State of California and the State of Nevada is presumed to throw any action to recover into the courts of Nevada.

The financial, political and judicial affairs of the State of Nevada are virtually controlled by the Comstock Mill and Mining Company, Senator J. P. Jones, president; Evan Williams, manager and superintendent; the Bullion and Exchange Bank at Carson City, Evan Williams, principal owner and manager; the United States Mint at Carson City, the patronage of which is under the control of J. P. Jones, and whose chief clerk, Robert Hopper, is cashier of the Bullion and Exchange Bank. This demonstrates that the affairs of this State, which is indeed a "rotten borough" and a "stench in the nostrils of all honest people," is in the hands of these two men. Stockholders are expected to go before the courts of this high-smelling community to obtain their rights.

It is easy to see what the result would be. But there are other means of securing the rights of stockholders and punishing thieves, even though they are rich and powerful. The Mining Stock Association of this city is moving in the matter, and all stockholders should join hands in seeking to recover the property of which they have been defrauded. I am glad to see that the ENGINEERING AND MINING JOURNAL is lending its assistance, as usual, to the cause of honesty in mining.

ANTI-RING.

The Report of the Tamarack Mining Company.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: Allow me, as a stockholder of the Tamarack Mining Company almost from its first inception, and as having always been watchful of its operation and management, to make a brief reply to some of the strictures of Q. E. D. in last week's issue.

He has criticised the charging against the $1,000,000 obtained from sale of the treasury stock, the cost of sinking and equipping new shafts. But this sale of stock was made for the very purpose of having a fund to meet such expenses.

A mine worked through vertical shafts, which it takes years to sink, should not be compared with mines having shafts following the lode down, and almost immediately beginning to produce copper.

There must be a special fund for sinking such unremunerative shafts.

But let us look at the simple facts of the case, and see what has been accomplished and what may be reasonably looked for in the future.

The total cash receipts from assessments and sale of treasury stock have been $1,320,000.

There have been returned to the stockholders in dividends $1,670,000, with a balance of assets on hand June 31st of $1,047,746.47, making the amount earned above all receipts $1,397,746.47.

In addition to this, two shafts have been sunk and thoroughly equipped and two others have been commenced and sunk 600 and 500 feet at a cost of $1,021,848.47.

All this has been accomplished with one shaft, with the mine much of the time very imperfectly opened up, with copper selling at 12 $\frac{45}{100}$ cents. What then may be hoped for with two shafts in full operation, the mine more thoroughly opened up, and with copper at 17 cents?

The estimated product from and after December is a reasonable one, and the high probability is, not only of the continuance of the present rate of dividends ($4 quarterly), but of their increase, with a large reserve for construction account.

When Nos. 3 and 4 shafts shall have been completed and come into full operation, the production should be largely increased with corresponding increase of dividends, and of the reserve fund for sinking other shafts as they may be required.

H.

PHILADELPHIA, October 27, 1890.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I have read with much interest your article and your correspondent's letter on the vexed question of the charging of so-called dead work in mines to capital or revenue, with special reference to the Tamarack Mining Company's report.

I have no interest in the Tamarack (worse luck), but I am rather an old hand in mining and mining accounts, having been the "putative father" of the great Tharsis mine in Spain as constituted twenty-five years ago, and at one time very deeply interested in the Rio Tinto mine. Likewise, I was the starter of the Silver Islet mine on Lake Superior, and I knew all the mines on the Keweenaw Peninsula before even the great Calumet was opened.

I may, therefore, claim to be an authority in mining matters, and knowing the fairness of your paper in giving both sides of any question, I venture to offer you mine as opposed to your own views.

In the first place, there can be no doubt that in a new mine like the Tamarack there must be considerable capital outlay, not dead work but *live* work, if the mine is proved to be good, and that to charge such work against revenue might be as misleading to the shareholders as any excess on the other side. That is to say, it might induce shareholders to throw away a good investment and then justifiably blame those who had misled them.

Take the case of the Tharsis and Rio Tinto, where great masses of copper ore were laid bare for quarrying by the heavy work of removing the overburden; it was manifest that if revenue were charged with this unduly in some years the dividends would disappear only to reappear the next year in increased amount, and thus an immense speculative power would be thrown into the hands of the knowing ones to the great detriment of the investor who would be guided by dividends only. The difficulty was met by creating an "overburden" account and writing off year by year such an amount as was justified by the output of copper ore. The result of this plan has been quite successful, the reductions of the account and the redemption of capital having proved more than adequate to maintain the sound financial position of these companies. The whole question is manifestly one of soundness or the reverse. If, as you suggest, all buildings, machinery, shafts and improvements on the Tamarack ought to be charged against the copper yield, the same dictum would manifestly apply to the works on the mine from the outset, because your argument applies equally to all, that if there is no copper there is no profit. Such a system, how-

ever, would manifestly strike a death-blow at mining as an investment for capital, and could not be sustained or advocated for the reasons I have already given.

If the Tamarack were a pockety mine merely, like the Silver islet and many "precious metal" mines, the placing of all profits to reserve might be defended; but it is not, and the duty of the management should be to charge to reserve such an amount annually as will fairly cover the gradual exhaustion of the workings and final exhaustion of the mine as a profit-bearing investment, which seems happily a long way off.

As far as such a revenue charge must be made, I entirely agree with you, but no further, and I think that even with such a charge on copper the cost with the increasing output will come down to six cents per pound of refined copper.

Of the low price of sale I know nothing except that it may have been easily an error of judgment caused by the extraordinary performance of the French syndicate (which cost me about half a million dollars, direct and indirect loss). From the existing conditions of the copper trade I should judge that the time to come will make errors of judgment impossible, and that the Tamarack will prove worthy of the confidence reposed in it by investors.

ALEX. McEWEN
(of London, England).

CHICAGO, October 29, 1890.

[Our correspondent's reference to the Rio Tinto "overburden account," is a case altogether favorable to our argument, for it is one of the most misleading items in that company's somewhat mysterious cost sheet. The Rio Tinto Company appears to have come to the conclusion that such an account is worse than useless, for in its report of May, 1890, it not only charges the cost of stripping £13,217 1?s. for 161,750 cubic meters to "pyrites account," *i. e.* to mining expenses, but it charged off against revenue £54,465 2s. 10d., the balance of the old overburden account. thus extinguishing the same.

There is no greater danger from the "speculative power" placed in the hands of the "knowing ones," through charging up to current working expenses the cost of stripping a moderate and sufficient amount each year, than in charging off against the overburden account a wholly arbitrary amount of the earnings.

In our estimation the first cost of the property and the working capital, which should provide the first plant, should be represented by stock and improvements, such as the Rio Tinto stripping, which are constantly being made or renewed, and which lose their value by the mere working of the mine, should be charged to working expenses. It is, in well managed properties, easy to keep such expenses so nearly uniform that their fluctuations can easily be taken up in a reserve fund, which every mine should have, and thus the even flow dividends could be maintained. In many continental European concerns a certain amount is annually charged from profits as a sinking fund for capital invested, but here this custom has not prevailed nor does it seem to be necessary.

The great object of a report to stockholders should be to give them plain reliable information which will make clear, without the aid of a trained accountant, the actual condition of the property, the actual cost of production and the profit or loss on the same; not an account that makes a fair showing with more or less mythical assets, which, when the mine is worked out, disappear at once. Most of our coal mining companies now charge all machinery, new shafts and opening new mines to current expenses and not to capital account, and certainly a coal mine is a more permanent and reliable species of mining value than a copper mine.—ED. E. AND M. J.]

The Prices of Lead.

EDITOR ENGINEERING MND MINING JOURNAL:

SIR: The quotation received by us for lead is 5·25c. per 100; we get our quotations from the Western Union, and of course our settlements for ore shipments and bullion shipments are made on this basis. I noticed in your journal, as well as in all other papers published both here and in Colorado, that the quotation on lead is from 5·50c. to 6c. in New York. As there has been considerable complaint from miners in regard to the quotations on which their settlements are made, we will be under many obligations to your valuable paper if you can give us some explanation n regard to these differences and can tell us where the Western Union get their quotations from and where the quotations come from that are published in the daily papers, as well as in your journal.

W. R. RUST,
Manager Tacoma S. & R. Co.

TACOMA, Wash., Oct. 29, 1890.

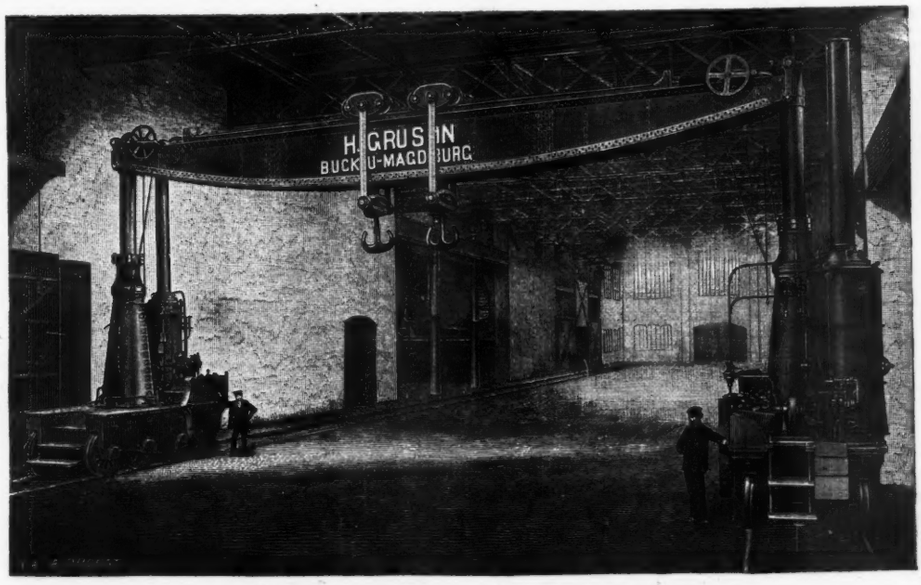
[The prices which have been lately paid for lead in New York are from 5·50c. to 6c., which, however, are exceptional, being only for small quantities, mostly carload lots and smaller lots, while the official bullion quotations given by the Western Union are based on sales only of lots of 50 tons and upward to one buyer and comprise only good desilverized lead, and not any sales which might have been made for corroding, chemical or other sorts of lead, and also for delivery here within a short time—mostly within a fortnight. You will have noticed all along that quotations for November and December have been considerably below the price of spot, having been nominally at 5·25c. to 5·35c., and the bullion quotation is therefore quite a correct one. The high prices which have been paid for spot lead here were simply on account of the great scarcity of this metal, which existed for a few weeks. The official quotation has been made to-day 5·10c.—ED. E. & M. J.]

THE LARGEST CRANE.

An esteemed reader of the JOURNAL writes us as follows: In your interesting "Notes" in a recent number I noticed one headed "The Largest Travelling Crane in the World," giving the figures of the new one at the Washington Navy Yard at 110 tons working capacity and span 59 feet.

This is big, but apparently not "the largest in the world." There are two cranes in use at the Gruson Works at Magdeburg, working at 150 tons load each, and with 65 feet span, and one of same dimensions in the Italian Government Works at Spezia. The Grusons, as you may know, turn out the chilled cast iron turrets or sectional domes now used on the Continent for covering the great guns in land defences—the largest sections of which weigh 90 tons. How is that for a single casting in "chill"—and which must be perfect to pass rigid government inspections? What is the heaviest class of chilled iron castings which our makers actually produce? I send you a picture of the Magdeburg crane to see its design.

G. B. S.



CRANE AT THE GRUSON WORKS, MAGDEBURG.

Baxeres' Universal Furnace Humbug.—An English exchange gives a description of this new humbug. We make the following extracts from this and comment on it editorially on another page:

"Dr. J. Baxeres, a well-known metallurgist of Oporto, has recently brought out a remarkable invention, to which he has given the name of the 'Universal Furnace.' This furnace will smelt and refine in a single operation every description of mineral, no matter what its composition might be—whether complex, silicious or pyritous, and even sulpho-arsenurets are as effectually reduced by its operation as any other metallic compound. Thus ores of iron, lead, zinc, copper, antimony, nickel, tin, silver, gold, etc., can all be readily fused by this method, which is based upon the chemical affinity of the alkalies and salts of alkaline-earthy metals with the volatile elements and with the metalloids mineralizing the metals, thereby forming definite salts, including oxides, hydroxides, sulphurets, arsenates, antimoniates, etc., from which the metal is obtained in a free state, with or without the addition of carbons, or, in other words, completely demineralized. This result is obtained by melting the minerals, after trituration and mixing in different proportions with oxide or salts of potassium, calcium, magnesium or barium, or with their carbonates, nitrates, sulphates, fluorates, borates, chlorides, etc., any one of these substances alone, or in combination, and with the addition, if necessary, of suitable flux. The reduction is affected by means of closed crucibles of iron or other refractory material capable of resisting the highest temperatures, and these crucibles, subjected to the action of circular involving flames, kept in continuous action, form the chief features of the furnace. A modern blast furnace can effect at the utmost three discharges during the 24 hours, or a daily total of 200 to 250 tons; while the Baxeres furnace is able to complete 50 discharges in the 24 hours, or a round output of 500 tons daily."

CENSUS OF THE PRODUCTION OF STEEL.

A special bulletin has been issued by the Census Office, giving the statistics of production of crude steel and steel rails for the year ending June 30th, 1890, as collected by Dr. William M. Sweet, Special Agent in charge of iron and steel statistics. The total production of steel in the United States, in the form of ingots or direct castings during the census year was as follows:

	1880.	1890.
Bessemer steel	985,208	3,788,572
Open-hearth steel	84,302	504,351
Crucible steel	76,201	85,536
Clapp-Griffiths steel		83,963
Robert-Bessemer steel		4,504
Total	1,145,711	4,466,926

The number of steel-producing plants is 158, as compared with 73 in 1880. Of these, Pennsylvania has 79; Ohio, 18; Illinois, 14; Massachusetts and Indiana, 6 each; New York and New Jersey, 8 each; Tennessee, 4; Connecticut, 3; West Virginia and Michigan, 2 each, and Kentucky, Missouri, Colorado, California, New Hampshire, Maryland, Virginia and Alabama, 1 each.

Pennsylvania produced 61·97 per cent. of the total production, as against 57·04 per cent. in 1880. Illinois made 19.44 per cent.; Ohio, 10 per cent.; West Virginia, 4·09 per cent.; New York, 2·22 per cent., and the other states above named each less than 1 per cent. of the total.

The production of Bessemer steel rails, including Clapp-Griffiths and Robert-Bessemer, was 2,036,654 tons in census year 1890, against 741,475 tons in 1880. The number of steel rail mills has increased only from 11 to 14 in ten years. The report says: "The increase in the number of establishments producing Bessemer steel has been the result almost entirely of the demand for steel in forms other than rails. All of the 11 Bessemer steel plants that were completed in 1880 had been built to manufacture steel for rails, many of them being added to previously existing iron rail mills. Of the 53 Bessemer steel plants at the close of the census year 1890, only 14 made steel rails during that year, and of the total quantity of rail produced over 90 per cent. was made by 10 of these works. Thus, while the production of steel rails has nearly trebled in amount since 1880, the number of establishments engaged in their manufacture has shown but little change in the 10 years, although many of these works have greatly increased in size and efficiency. The competition in the manufacture of Bessemer steel rails has compelled many of the rail mills to convert a large part of the steel produced by them into forms other than rails, the production of rails to any considerable extent at the present time being possible only in works favorably located for the supply of cheap raw materials and operated under the latest and most improved methods of manufacture."

The number of plants for the manufacture of open-hearth steel has increased from 25 in 1880 to 58 in 1890, and the production has increased during the same period from 84,302 tons to 504,351 tons. Of the total production during the census year 1890 Pennsylvania made 406,292 tons, and Ohio 61,232 tons. The crucible steel industry has shown but little progress since 1880, the production in that year amounting to 76,201 tons, as compared with 85,536 tons in the census year 1890. The number of crucible steel plants has increased from 36 to 47 during the decade. Pennsylvania made 64,235 tons of the total for 1890, and New Jersey stands next with 8,343 tons.

Concerning the present status of the basic process, the report says: "The first basic steel made in the United States was produced experimentally at Steelton, Pa., by the Pennsylvania Steel Company, on May 24, 1884, in a Bessemer converter. The beginning of the manufacture of basic steel in this country as a commercial product, however, dates from 1888, on the 28th of March of which year the first basic open hearth steel was produced at the Homestead Steel Works of Carnegie, Phipps & Co., limited, at Homestead, near Pittsburg. Since that date the manufacture of basic open-hearth steel has been continued at these works, and during the census year 1890 this firm commenced the erection of eight additional open-hearth furnaces for the manufacture of basic steel, of which number four are now in operation, and the remaining four furnaces are expected to be ready for working in a short time. When completed these works will contain 16 open-hearth furnaces prepared to manufacture basic steel.

"The manufacture of basic steel is now regularly carried on at the Steelton Works of the Pennsylvania Steel Company, where a combination of the Bessemer and open-hearth process is used. During the census year 1890 the Henderson Steel and Manufacturing Company, at Birmingham, Ala., produced steel experimentally by the basic process. Since the close of the census year the Southern Iron Company has successfully commenced the manufacture of basic open-hearth steel at its works at Chattanooga, Tenn. The Pottstown Iron Company has also manufactured basic steel. The total production of basic steel in the United States during the census year 1890, nearly all of which was made by the open-hearth method, a small quantity being made by the duplex process, a combination of Bessemer and open-hearth methods, amounted to 62,173 tons of 2,000 pounds each."

THE METALLURGY OF STEEL.

Dr. H. Wedding, in his review of Mr. H. M. Howe's work in *Zeitschrift des Vereines Deutscher Ingenieure* of October 25th, says:

"This work is a reprint of a long series of essays which for several years appeared in the ENGINEERING AND MINING JOURNAL."

The review, which occupies about two columns, is summed up in the closing passage, which we quote:

"The contents of this monograph are rich, the language is clear and easy to understand, the opinions are precise, the work is one of unusual value for the siderometallurgical literature, and deserves to be purchased by all the ironworks in Germany.

"The German metallurgist is familiar with the English language; a translation of this work would therefore be superfluous—it would even be undesirable, as the peculiar style of the original would necessarily in a large degree suffer by a translation."

OVERRATING OF WATER MOTORS.

In a paper in the Michigan *Engineers' Annual*, M. E. Cooley describes some tests of the Backus and Tuerk water motors, which show that while the efficiency of these machines is higher than might be expected, averaging about 45 per cent. of the energy of the water used by them, their capacities are very much overrated by the makers. A Backus 30-inch double motor, rated in the catalogue at from 8 to 12 horse power for water pressure of 75 to 150 pounds per square inch, was tested under a pressure of 83 pounds, and in four tests gave a maximum of only 2·14 horse power. The radius of the brake arm was 5¼ feet. The following are the results of the four tests:

Weight at end of arm	3 lbs.	4 lbs.	5 lbs.	6 lbs.
Revolutions	564	4·4	428	352
Brake horse power	1·692	1·736	2·14	2·112

The calculated total horse power of the water used, adopting a coefficient of discharge of the nozzles of 0·8, was 4·73 horse power, and the efficiency of the motor at the maximum power developed, 2·14 horse power, was 45·2 per cent. A No. 12 Tuerk motor of about the same size as the 30-inch Backus, with a single ⅝-inch nozzle, according to the catalogue should give about 5 horse power, under a pressure of 83 pounds per square inch. Calculating the total amount of water used from the head and the area of nozzle, and using a coefficient of discharge of 0·8, the horse power of the water itself is only 4·2 horse power, which, multiplied by 45 per cent. efficiency, gives only 1·89 horse power as the horse power of the motor, instead of 5 as rated. The amount of water used for any one of these motors doing considerable work is very large. The Backus double motor tested consumed at the rate of 2,735 gallons per horse power per hour. It therefore would appear that, except for very small powers, the water motor in its present form is not likely to be used to any great extent.

Water motors for considerable power, such as the Pelton water wheel, are used on the Pacific slope in the mining districts under enormous heads. With the special form of bucket known as the Pelton, an efficiency of over 85 per cent. is claimed to have been reached.

NOTES ON RECENT IMPROVEMENTS IN GERMAN STEEL WORKS AND ROLLING-MILLS.*

In recent years many new appliances have been introduced into German steel works and rolling mills for the purpose of improving working methods, creating and maintaining increased production, and satisfying the ever-growing demand for metal of closely specified hardness, strength and form. A result of the improvements has also been to aid most effectively in demonstrating the real superiority of ingot over wrought iron for almost every possible purpose, and in dispelling the last vestiges of prejudice unfavorable to the new metal.

If, nevertheless, no marked decrease in the number of puddling furnaces has yet been noticed, the cause of their survival must be attributed to the greatly increased consumption of all kinds of iron manufactures. Several large new works for the production of ingot iron are now, however, in course of erection in the Rhenish-Westphalian district, and upon their completion a rapidly diminishing output of wrought iron may be anticipated.

The present aim of all large works manufacturing ingot-iron is to work the molten blast-furnace pig into a finished product without any further fuel consumption than is required to furnish steam for the rolling mill. Though practice has established the feasibility of this principle, no works can yet point to its complete adoption, partly because of the limitations imposed by existing conditions and plant, and partly, also, on account of the highly-diversified character of the finished products.

The Bessemer works were the first to feel the influence of the basic process; but of recent years a similar influence has affected the open hearth, and the owners of works possessing both a converter and an open-hearth plant are now endeavoring to arrange them for combined working, both in charging and in casting. In small works the basic-lined reverberatory furnace is constantly gaining ground over the old puddling furnace. The small basic converter, on the other hand, has been erected at only a few places, and is in actual operation at fewer still.

Opinions have long differed with regard to the best number and arrangement of basic converters for a given daily production. These varying views are to be partially explained by the rapidly improving efficiency of basic practice; the number of heats per day and the durability of the lining were, in the early days of the process, far inferior to the corresponding features of acid practice, and the improvements which experience has gradually developed are such as could scarcely have been anticipated.

The system of removing and replacing the entire vessel has been adopted in isolated cases only. As soon as the fact seemed fairly well-established that three 10 to 12-ton basic vessels would suffice for a daily production of 400 to 500 metric tons, the circular arrangement of the vessels around a stationary, revolving ladle-crane was recognized as simplest in general plan, and was carried out in a number of works. Wherever this crane handles the charging ladle, and also has to carry the steel ladle while the metal is being poured from the converter, separate provision must be made for handling the steel ladle during the cast. This may be done either by a second stationary crane or by a ladle car which runs over a long casting-pit. The latter plan promotes to best advantage the separation of the converter house from the casting house, and commends itself particularly for a combined open-hearth and converter practice.

Fig. 1 shows the general arrangement of a plant embodying these ideas. The four vessels *C* are set in line; adjoining them are the casting pit *C* and the ingot cranes *B*, and beyond these, in the same direction, the open-hearth furnaces *H*. The ladle of direct metal is brought by track No. 1 on the general floor level to the hydraulic lift *K*. There it is raised to the charging level of the converters. The track at this level may be laid either on the crane or on the chimney side of the vessels. In the former position the supports of the track partially intercept the view of the ves-

*A paper read by R. M. Daelen, Dusseldorf, Germany, New York meeting, September, 1890, American Institute of Mining Engineers.

sel's mouth from the pulpit during the operation of pouring; in the latter position long runners for the pig metal are unavoidable.

Since, however, the advantage of emptying the charging ladle by tapping, rather than by tipping, has come to be recognized, another arrangement would recommend itself, namely, the providing of each pair of converters with a hydraulic lift placed between them. This arrangement exists in several works outside of Germany. It permits short runners (which would have to be provided for tapping in any case) and does away with the upper charging track altogether. Track No. 1, on the general level, then serves with the necessary switches for the movement of both the pig and the steel ladles.

The design of the steel-ladle car has usually been determined by local conditions. A locomotive-crane (Figs. 2 to 5) is the customary type; the boiler, engine and pump are all mounted on the car, and the ladle is arranged to be swung and also lifted. A somewhat simpler, and on this account preferable, form of car is illustrated in Figs. 6 to 10. It dispenses with the vertical movement of the ladle, which experience has shown to be superfluous; and, instead of being propelled by steam, it is moved by means of a hand-gear *u*, or by an independent locomotive which runs on the adjoining track, No. 2, shown in the general plan, Fig. 1. The car is of wrought-iron. The ladle can be tipped, as shown at *n*, and swung in the arc *o* to serve two lines of molds. During casting the car is always moved in the direction *m*, so as to clear the filled ingot-molds. Care is taken to bring the tops of all the molds to the same level.

A hydraulic cylinder is placed in the pit, out of the way of the molds, and is fitted with a hooked plug which is used to force inward any obstruction that may form in the tapping hole of the ladle.

Track No. 3 (Fig. 1) is used to convey the slag cars from beneath the converter to the slag-grinding mill. Refractory materials are brought to the vessels over track No. 4, located on the first platform (Figs. 12 and 13). Lime and fuel are supplied by track No. 5 in the roof truss. Both tracks, Nos. 4 and 5, are served by a hydraulic hoist *A* (Fig. 12). The same service might be more cheaply performed by a wire rope tramway, the first cost of which is certainly less than that of the track and hoist, while it offers the decided advantage of an automatic lime and coke supply to the converters.

For a plant embodying the above-described general features a building of moderate height will answer. The roof can be set so low that the greater part of the converter flame will be carried off on the outside, reducing interior smoke and heat to a minimum. This makes it practicable, with advantage to adopt the same form of roof for both the converter and the casting house.

In the construction of the converter itself the use of a middle ring and journal, made in a single piece, has been generally abandoned; for when it is composed of cast iron, even though it be very heavy, it is not perfectly safe, and when made of wrought iron it is very costly. The ring is now constructed of heavy plate to which cast-steel journals are screwed.

Tar-dolomite bricks, made in a hydraulic press, have proved an excellent material for the basic lining. Walling-up with them occupies much less time than ramming, while their durability is not inferior. Mechan-

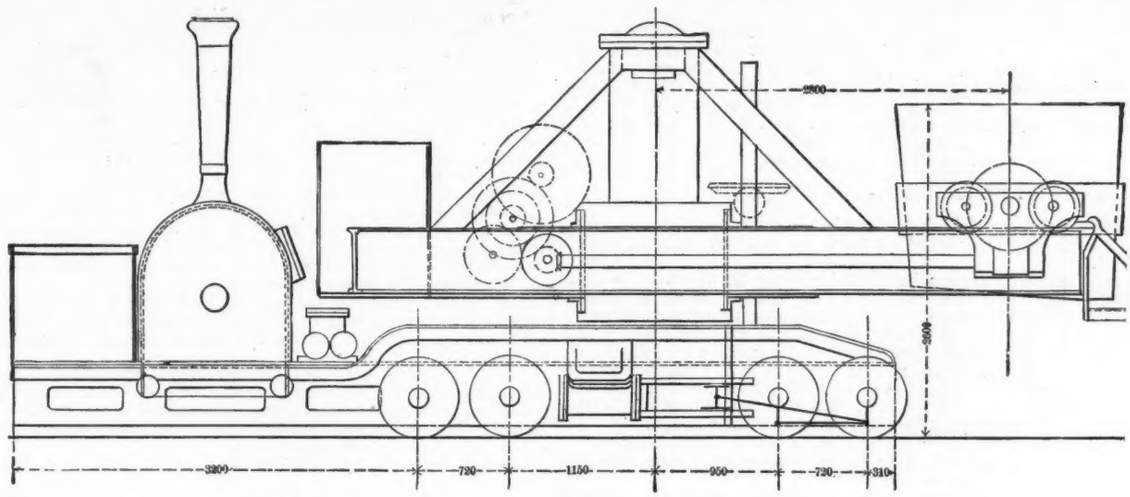


FIG. 2.—SIDE ELEVATION OF 12-TON LOCOMOTIVE LADLE-CRANE.

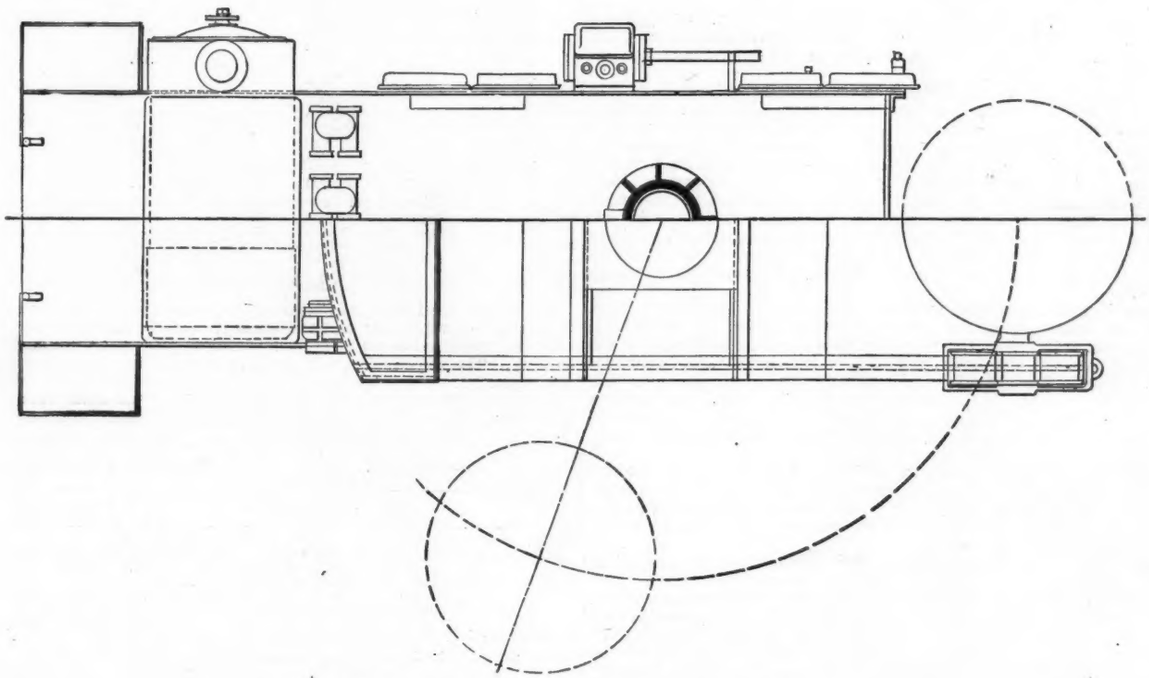


FIG. 3.—PLAN OF 12-TON LOCOMOTIVE LADLE-CRANE.

ILLUSTRATIONS SHOWING IMPROVEMENTS IN GERMAN STEEL WORKS AND ROLLING MILLS.

ical appliances have also been successfully employed in making the bottoms.

The utilization of converter slag as a fertilizer is an important business for every basic works. The substitution of a ball pulverizer for the Chili mill marks a decided improvement. The new machine costs less and consumes less power, besides permitting without difficulty the far more thorough removal of the dust which works through its casing.

The cause of the great progress which has been made in increasing the output of the basic converter lies first and foremost in the gradually reduced period of the blow. The former duration of twenty minutes for 10-ton converters has been brought down to twelve minutes. The excess of blast, which formerly amounted to 150 per cent., is now about 30 per cent. Great improvement of design is noticeable in the air compressors, the effect of which has been to reduce the lost space at one end of a single air cylinder from 5 per cent. to 2 per cent.

Communication between the converter plant and the open-hearth plant is established by the side tracks Nos. 2 and 6 (Fig. 1). Over these the ladle of partially blown metal (*i. e.*, metal taken from the converter before the completion of the after-blow) is brought to the lift *K*, by means of which it is raised to track No. 7, on the charging-floor, where it is tapped through a short runner into the open hearths.

(TO BE CONCLUDED.)

THE MAGNETIZATION OF IRON ORE.*

The peculiar property of the lode-stone has been known for many centuries. It was very early observed that, by contact with it, iron is magnetized.

Deposits of magnetic ore are distributed all over the world. The ore is sometimes very rich and comparatively free from gangue, sometimes sparsely disseminated in the native rock. These bodies of lean ore often cover large areas. Modern ingenuity has utilized the principle of the magnet to separate the magnetic ore particles from the rock which has previously been crushed. The magnetic separator is no longer a novelty. It was only at the last meeting of the Institute in New York that Messrs. Birkinbine and Edison (Trans., XVII., 728) and Mr. Robert Cook (Ib., 599) described some of the principal designs of apparatus in use.

The presence of ferrous oxide in magnetite, whether as a molecular constituent of the compound, or as an independent molecule, seems to communicate the property of magnetism.

Magnetic oxide of iron, as an artificial product, is considered to result from the direct action of carbon dioxide. In simple determinative blowpipe work, the reducing flame alone, or with the aid of alkaline carbonate, produces magnetic particles, or slag-globules, from nearly all iron minerals.

Spathic iron ores have long been known to exhibit, after roasting, magnetic properties—largely due, however, to the presence of metallic particles in the roasted ore. Carbon dioxide in the ore is also here considered an important factor.

In nearly all cases of the carbonates of iron similarly treated, minute globules of metallic iron are contained in the roasted oxide. Furthermore, the expulsion of the carbon dioxide contained in the ore, with contact of carbon at a certain heat, approximates to the conditions of the blast furnace and favors the reduction of part of the ferrous oxide to the metallic state. The roasted carbonate is always strongly magnetic. But, from the fusible nature of the ore, it is extremely difficult to prevent it from melting during the process, so that nearly all the associated minerals assume the form of "clinkers" with the ore. This circumstance, together with the expense of crushing the ore sufficiently fine, makes the magnetic separation of iron oxide from the gangue useless or unprofitable in such cases.

Hematite is sometimes magnetic and, according to Dana, even magneti-polar—of course, as an incidental occurrence, other than in crystallized specimens. On account of its rarity, as well as the feebleness of the attraction it presents, magnetic hematite is not available for practical purposes. Martite, the isometric ferric oxide which is supposed to be a pseudomorph after magnetite, is attracted by the magnet. The famous ore from Marquette, in the Lake Superior region, abounds with crystals of martite. The ore from the Juragua mines, in Cuba, is in part magnetic. Fayalite, $FeSiO_4$, is magnetic.

The anhydrous oxides of iron in general are magnetic. Of all the hydrous oxides of iron, not one is magnetic. Brown hematite or limonite (with which göthite and turgite are usually associated), as well as the sub-varieties of hydrous oxides, is non-magnetic, and has no effect upon the magnetic needle.

The importance of the brown hematites is indicated by the amount of such ores consumed in the manufacture of iron in this country and abroad. Prior to the development of the Lake Superior hematite regions, brown hematite was the chief ore in use in America. There are still vast bodies of the brown varieties unworked in England, and in this country they occur in nearly every State in the Union. Since the advent of the rich Lake Superior hematite ores, hundreds of productive brown hematite ore mines have been abandoned; and there are still numerous undeveloped beds too lean to be handled profitably. In Pennsylvania the mines of Lehigh and Northampton counties have furnished for a quarter of a century the raw material of nearly half the iron made in the Lehigh Valley.

With the exception of the oölitic varieties, the localities named may be considered to represent all of the varieties of brown hematite ores. At present only the better grades are in use, and of these the supply is limited. An investigation of the quality, product and yield of thirty of these mines for the year 1877, undertaken by the writer, showed that over 100,000 tons of this ore, represented by fully 500 samples and analyses, averaged only 37 per cent. of metallic iron. Three-quarters of this was wash ore. The bulk of this ore, which will fairly represent the majority of this class of mines in the United States, will carry about 34 per cent. of metallic iron in the wash ore.

Examination of the iron oxide, or ore proper, shows it to contain from 45 to 60 per cent. metallic iron, which, in the wash ore is, in many instances, reduced below a marketable standard by the admixture of foreign material, chiefly quartz gravel, slates and clay.

* Abstract of a paper read at the New York meeting of the American Institute of Mining Engineers by Mr. Clemens Jones.

Separation of the ore has long been a problem presenting many-sided difficulties that have never been successfully overcome. Water-jigs and specific gravity separators of innumerable designs have been invented for the purpose all over the world. But the very best results with these machines fall short of obtaining the ore entirely separated without loss in the tailings. A concentrate carrying 42 per cent. of metallic iron is a fair economical result from these machines, and, except with unusually rich ores, 45 per cent. of iron are seldom obtained. The only satisfactory solution of the problem lies in the recovery of all of the ore proper, entirely free from foreign material.

Some experience a few years ago with a method of water-separation acquainted me with the futility of attempting this result by that means or any other at that time known. With the modern demand for the richest material it is easy to anticipate that a blast furnace cannot exist among abandoned ore beds. And the fact must not be overlooked that in this country nearly all of the older blast furnace plants were located within or adjacent to the brown hematite regions. A perfected method of concentrating would mean a survival of the brown hematite ore as a source of supply.

On rapidly drying a small sample of limonite over a powerful Bunsen flame on one occasion, I observed that the smaller particles were magnetized. Could the ore be magnetized? A trial on a more practical scale convinced me that such was the case. I then experimented with several different ores, and found that all the ore-particles were so strongly affected as to permit their complete separation by means of a magnet.

A series of experiments followed, in every instance giving the same results. My attention was then directed toward finding out the conditions as well as the cause of the phenomenon. This led me to the conclusion that the agency of heat in the presence of carbon or carbon dioxide magnetizes the hydrous oxides of iron.

Further on I will endeavor to qualify this statement; but before beginning its discussion it may be interesting to allude to the practical method and the results, from a commercial standpoint, of some of the experiments.

The ore is placed in a convenient receptacle and merely roasted by the usual process, using either solid or gaseous fuel. It is undesirable to use much heat, since at a temperature of cherry-red magnetization is fully imparted. The ore is drawn as fast as it reaches this temperature, and is at once ready for magnetic separation.

In the following list, for obvious reasons, the ores are designated alphabetically.

	Iron in Crude Ore. Per cent.	Iron in Concentrate. Per cent.	Iron in Tailings. Per cent.	Of Ore Recovered as Concentrate. Per cent.
A,	40·98	55·88	....	..
B,	34·32	51·72	....	..
C,	38·04	45·24	....	68
D,	40·63	50·04	....	80
E,	20·30	46·32	5·21	35
F,	40·00	53·71	...	65
G,	49	60	....	80
H,	37·06	50	....	65
I,	41·31	52·46	....	85
J,	35·35	55·04	...	60
K,	33·55	48·63	2·56	70
L,	31·31	48·87	5·20	70
M,	39·84	51·29	5·00	78
N,	42·55	55·36	5·76	86
O,	43·84	55·61	....	70
P,	42·96	54·43	....	85

A, *B*, *C*, *D* and *E* are from Pennsylvania, *A* and *B* being wash-ore; *C*, washed and jigged ore; *D*, a fine refuse sand; and *E*, a similar material; *F*, an ore separated by a Bradford jig; *G*, ore from a Northampton county, Pa., mine; *H*, the tailings rejected by a new jig; *I*, a Pennsylvania ore; *J*, a lot of six cars of ore "condemned" at the works; *K* and *L* are from the same mine in Pennsylvania and impossible to separate by water-jigging; *M* is a mixture of fine ore from Pennsylvania mines; *O*, an ore from Connecticut; and *P*, the fine ore from a large mine in New York.

The commercial success of treating ores in this way depends on the three items: cost of wash-ore; cost of roasting; cost of concentration. The first may be considered to range from 75 cents to $1.50 per ton, according to locality. The second item will be fully covered by the following statement taken from the books of a large company exclusively engaged in roasting carbonate ores, and at that time under the most capable management; it shows the actual cost of roasting and handling ore per ton.

Roasting Ore.	1886.	1887.	1888.
Labor, including car and top man	$0 0883	$0.0673	$0.0811
Supplies	0.0024	0.0032	0.0091
Coal	0.0725	0.0750	0 0748
	$0.1632	$0.1455	$0.1650
Culm, per ton	2.00	2 10	2.25

Average cost, $0.1600.
About one ton of culm used to 30 tons of ore.

Handling and Wharf Expenses.	1886.	1887.	1888.
Labor, incld'g engin'r & teamster	$0.0514	$0.0439	$0.0720
Supplies and coal	0 0177	0.0132	0.0169
Team	.....	0.0040	0.0062
Repairs, etc	0.0046	0.0025	0.0029
	$0.0737	$0.0636	$0.0980

Average.....$0.0700
Average total cost..... 0.2300
Per ton of ore treated.

The third item remains to be determined, namely, the cost of concentration, including royalty on the process. This would be two cents per ton for concentrating and 25 cents royalty. Taking as an example ore "K" in the foregoing list, the cost of the concentrated ore would be as follows: Cost of 1¼ tons ore, 2.25; roasting, 36 cents; concentration and royalty, 27 cents; total, $2.88. At a yield of 48 per cent. iron, this is six cents a unit, or, in round numbers, $6 to the ton of iron.

To determine the extent to which the other constituents of the ore were affected, I tested several of the ores, of which two examples will suffice. They gave the following results:

Ore E.	Raw.	Concentrates.	Tailings.
Iron	20·30	46·32	5 21
Phosphorus	0·12	0·30	0·09
Ore L.			
Iron	31·31	48·87	5.20
Silica	.....	20·25	33·20
Manganese	.....	2·20	1·18

The surprisingly small amount of ferrous oxide in the magnetized or

leaves the question, whether magnetization is wholly due to its presence, very uncertain. In the list of ores given, *G*, carrying 60 per cent. of iron, which would be presumably high in ferrous oxide, contains but 3·07 per cent. of ferrous oxide. In some cases the raw ore contains nearly this amount. If the reduction caused by roasting were the sole cause, it would be reasonable to expect the *exterior* of the particle to be the magnetized portion. But lumps of the roasted ore having been broken, small pieces, the magnetization appears to be permanent. Samples which I have kept for over a year in contact with air, have preserved the quality unimpaired. Cooling the redhot oxide in water affects it somewhat, but it is still capable of responding through that medium to the attraction of a magnetic field.

The phenomenon seems to be connected with the expulsion of the combined water, and, I think, is largely dependent on its physical separation

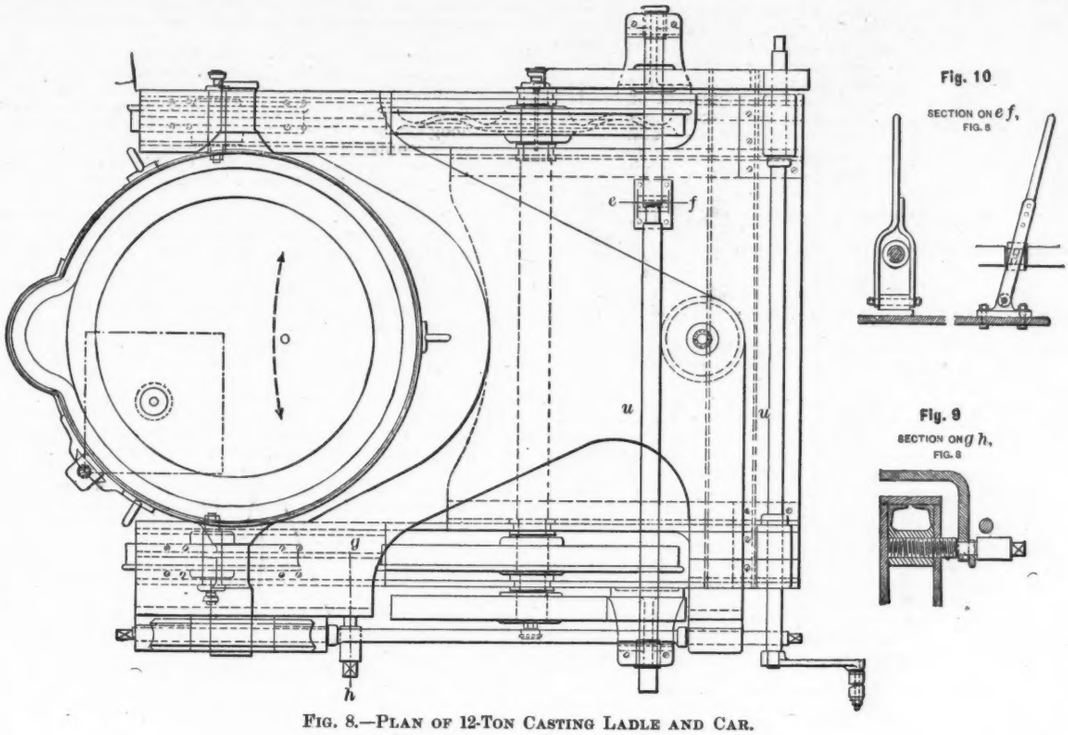


FIG. 8.—PLAN OF 12-TON CASTING LADLE AND CAR.

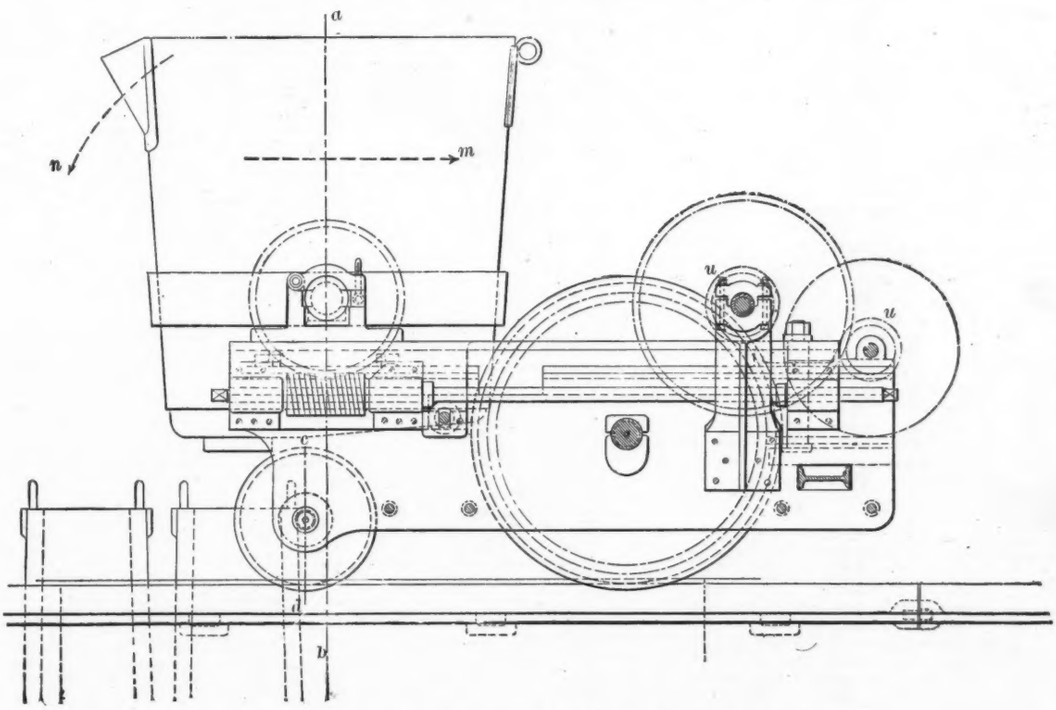


FIG. 7.—SIDE ELEVATION OF 12-TON CASTING LADLE AND CAR.

ILLUSTRATIONS SHOWING IMPROVEMENTS IN GERMAN STEEL WORKS AND ROLLING MILLS.

carefully selected from the inside of the lumps, showed in some cases even more strongly marked magnetic properties.

A number of trials with the anhydrous oxide, both red and specular hematites, conducted in precisely the same manner, gave no evidence whatever of resulting magnetization. Crystallized specimens remained likewise unaffected. While the porous character of the brown hematite would permit permeation by reducing gases, it is difficult to understand how such minute deoxidation could magnetize it so strongly. Moreover, from the ore. During the process some of the oxides glow quite strongly. The raw oxide, when heated to redness in a closed glass tube, gives off a small amount of carbonic acid with its water, but is only feebly magnetic. There is no apparent evidence that ferrous oxide is produced by decomposition of the water. The only statement now possible is, that the hydrated oxides of iron become magnetized at a red heat in contact with carbon or carbon dioxide.

It may be worth noting that the idea of employing a magnetic separa-

tor in a process for "manufacturing cast steel and malleable iron of a superior and uniform quality directly from ores" was announced some years ago. The curious supposition on which it was based was, that when "impure ores" are brought to a white heat in a furnace (thereby producing metallic sponge), they can be separated from "pure ores" by the "simple mechanism of revolving magnets." Some of the "noxious elements" thus to be eliminated were "titanic acid, vanadic acid, chromic acid, sulphuric acid, sulphur, phosphorus, phosphoric acid, silicic acid, silicates." The resulting product was to be simply melted.

It is of course a logical deduction, that all hydrous ores of iron become magnetic in the blast furnace, and that at the proper zone even anhydrous hematite does so. Ore concentrated as above described is peculiarly adapted to use in the blast furnace. Before the ore-particles reach a red heat in the process of roasting, violent decrepitation takes place, thus breaking or splitting up into small fragments all the lumps of ore. This state is most desirable for rapid reduction in the blast furnace, and, aided by the easy fusibility of the ore, offers the most favorable conditions for "driving" and regularity of work.

The subject-matter outlined in this paper is embraced in a process on which application for letters-patent has been made.

ARTISTIC METAL WORK IN JAPAN.—II.

By Adolf Mezger.

Edited with Notes by R. W. Raymond.

2. *Castings.*—These are sometimes in one piece and sometimes composed of several parts. Of the castings in one piece I have seen a number of very large and heavy bells, also statues of Buddhist gods, vases, temple decorations, small statuettes, mirrors, etc. They are all made in the same way, which was also doubtless the method of the celebrated European mediæval artists, such as Peter Vischer and his compeers, and which, except for heavy bells, has now fallen into oblivion, because it does not satisfy the modern demand for the indefinite duplication of castings from a common pattern.

The Japanese artist makes first a core of a mixture of sand with clay very carefully selected, carves this roughly to the proper shape, covers it with a layer of beeswax or vegetable wax of the thickness which the metal is to have, and then carves in the wax his delightful patterns, or lays in low or high relief upon it (sometimes even standing entirely free upon a slight connection with the main surface) waxen flowers, birds or animals. It is evident that this operation, performed upon a highly plastic material, unhindered by any mechanical difficulty, and permitting corrections and changes to any extent, gives full liberty to artistic design.

When everything is finished the whole is covered, by means of a fine printer's brush, with a first layer of liquid clay, and, after this has dried, the operation is repeated over and over again, until the cover is so thick and solid that it will stand the rough after-treatment. The mass is then warmed from inside and outside until the wax melts and runs out through holes left in the clay. (Partly, however, it is absorbed by the clay and remains in it.)

The mould is now ready and the casting is poured. The piece comes out with a *patina* or surface-film which shows many colors—the dark red and olive green being most highly esteemed. The color depends partly upon the alloy, partly, it is asserted, upon certain additions to the wax. The theoretic explanation of this effect is, that the wax which has been absorbed by the clay develops, in contact with the glowing metal, gases which prevent actual contact between metal and clay, and thus produces both a fine surface and (together with the imprisoned air) the colors due to the lower metallic oxides. It is conceivable also that the resulting colors may be influenced by substances added to the wax. All these operations for the production of fine castings, and especially the methods of coloring metals, which are mentioned further on, are largely secrets, possessed by certain families and handed down as heir-looms. I have tried in many cases to follow the practical process performed before my eyes, and to find the chemical explanation of the phenomena observed. This is not difficult when the reagents are merely the sulphates of iron, copper, or perhaps zinc; and even the effect of the addition of organic matter to such baths can be more or less completely explained; but reasoning comes, for the time being, to an end when the sap of a certain plant is applied after a vitriol bath, or when the ash of a certain plant is employed as the only agent for an intermediate stage of polishing. I became thoroughly satisfied that this was no empty pretense; that the artist, following the method to which he was accustomed, could not succeed without the sap or the ash of that particular plant. But I had no opportunity to pursue the inquiry more deeply.

[NOTE.—Of course, assuming the real efficacy of this unnamed plant, chemical analysis should give the clue to it. The proportions of finely divided silica in its siliceous skeleton might affect the polishing property of its ash, and perhaps no other plant known to the operator might have just that amount of silica. On the other hand, many ingredients, such as iodine, in the plant substance, might account for other effects. It must be remembered that such practitioners neither have any inducement, nor possess the requisite knowledge, to hunt for substitutes. If a certain reagent, the knowledge of which is a treasured hereditary secret, proves efficacious in practice, why should the man who owns the secret trouble himself to destroy its exclusive value?—R. W. R.]

Castings of this kind are generally finished when they come out of the mould, and are not gone over with instruments. Both the ancient and the modern examples are often incomparably beautiful, by reason of the perfect freedom and ease enjoyed by the artist in his decorative work upon the wax, as has been pointed out already.

The material of these castings is furnished by different alloys of copper and tin, or copper and zinc, and a great number of different alloys in which copper, tin, zinc, antimony and lead occur in various proportions.

[NOTE.—The knowledge possessed at the present day on the subject of alloys is so largely empirical, and the unexplored field is still so large, that we may confess, without any implications derogatory to science, the probability that alloys have been discovered and employed by ancient or barbarous practitioners, the knowledge of which we do not possess, and might with advantage acquire. In a province in which we ourselves have done little more than grope blindly and grasp and try what we happened to come across, it is conceivable enough that those who could do nothing *but* grope may have surpassed us. A blind man gets along better in the dark than a man with eyes. Or at least (if we drop the unnecessary questions of relative superiority) of two men in the dark, one may find things which the other does not—and no special credit to either of them. Whoever has studied the able report prepared by Prof. Thurston for the United States Testing Board, on certain triple alloys, will have derived from it, besides admiration for the author's comprehensive grasp, scientific method and ingenuity of statement, a strong impression of the vastness of the work yet to be done before any induction can be safely attempted as to the connection between the properties of metals and the properties of their alloys. The researches of Dr. Dudley on steel rails and car-wheel iron, those of Mr. Keep on various ingredients alloyed with iron and with each other in cast iron, wrought iron and steel, and many others which could be cited, confirm this impression. We are still collecting, testing and disputing the facts. We have discovered no laws. And, meanwhile, our enterprising practitioners are discovering new alloys, of nickel, of phosphorus, of aluminum, with extraordinary qualities—all by the Japanese method!
R. W. R.]

It seems that every famous master has had his own mixture, mostly depending upon the color of the patina wanted. We must insist upon an important distinction between an object which has received its color in the process of casting and one which was made originally bright and has been colored afterwards. The latter operation forms a separate chapter in Japanese art-industry.

Very large castings, for instance, the celebrated Dai-buts (*Dai*, grand; *buts*, buddha) of Kamakura and several others, are composed of cast plates, each made originally, no doubt, over a wax model, and subsequently joined together. I examined the Kamakura Dai-buts repeatedly and convinced myself that the plates are soldered together with the same alloy of which they themselves consist; and I cannot conceive how this was done in any other way than by putting the plates together (inclosed in clay walls), and pouring fluid metal between the edges until a common welding heat was produced and the parts were thus united.

The Japanese mirrors cast from metallic alloys often present a very curious peculiarity, which justifies the name of "magic mirrors," conferred upon them. They bear on the back decorations in relief, such as Chinese characters, flowers, arabesques, trade marks, etc. The surface of the magic mirror itself seems to be a perfect polished plane, and shows no trace of the design embossed upon the back. Yet if a strong light (like the rays of the sun or the electric arc light) be reflected from such mirror upon a white screen, the design upon the back is distinctly exhibited on the screen.

The alloy of which such mirrors are composed always contains antimony, and their curious property may be ascribed to the more rapid cooling of the thin parts (about one millimeter thick) as compared with those parts which are thicker (say four millimeters) by reason of the extra metal in the embossed design on the back. This more rapid cooling may be supposed to have as a consequence a different degree of resistance in the metal to the polishing material, and finally, therefore, a different capacity of reflecting light.

Another explanation ascribes the phenomena to the behavior of the thinner parts of the metal, which, it is said, become convex under the polishing process, while the thicker parts retain a plane surface. This seems to explain some cases, but does not in my judgment cover all, though it must be confessed to have in its favor the important corroboration of experimental proof.

[NOTE.—I think Mr. Mezger fails to appreciate the completeness of this explanation. Distinguished physicists, among whom may be named Sir David Brewster, have long busied themselves with the problem, which was first presented by magic mirrors of Chinese manufacture, and theories connected with the chemical composition and molecular structure of the metal, like the one suggested above by Mr. Mezger, have been advanced on high authority. But the explanation he mentions last, of which Prof. Mendenhall, now Director of the U. S. Coast and Geodetic Survey, may be considered as the conclusive demonstrator, though not, I believe, the originator, is, I think, stronger and more universally applicable than Mr. Mezger supposes. The first hypothesis, of a different reflecting capacity due to the molecular condition of the metal, and the effect of polishing upon it, is open to this fatal objection, that such varieties in the quantity of light reflected or (what is the same thing ultimately) in the texture of the surface, would be detected by the eye upon inspection of the mirror; whereas, the magic mirrors, so far as I know, never reveal such inequalities of polish or reflecting power. On the other hand, the hypothesis of a convexity of the thinner parts is supported by the following observations:

1. If such a convexity did exist, the result would inevitably be, in a reflection upon a screen, a diminution of light upon those parts of the reflections corresponding to the thinner parts of the mirror, because the convex surface would scatter the light. This is easily proved by direct experiment. Of course, as a corollary, the thick parts retaining their plane surface would reflect the light with maximum directness and concentration; and the design on the back of the mirror, which these thick parts represent, would therefore appear on the screen as brighter than the rest of the reflection.

2. That this convexity does actually exist can be easily proved by simple inspection upon any magic mirror. Nor is any other instrument needed except the unassisted human eye. Only the eye must not observe merely the surface, at the short distance of ordinary examination, when the object is held in the hand, for this small radius is not enough to make the divergence of light rays and the consequent scattering of light from the convex surfaces easily discernible. But if the observer will catch in the mirror a pair of parallel lines (say in the cornice of the room, or at a distance comparable to that), he will see at once that their parallelism is distorted by the thinner parts of the mirror. In short, he will find upon this simple test that the surface of the mirror is not, what it appears on a near and careless observation to be, a true plane. Now, if Mr. Mezger, who possesses a fine collection of Japanese metal-work, including some admirable specimens of magic mirrors, can produce, from that collection or from any other, a magic mirror which does not distort the reflection of parallel lines, while it does show in different parts different quantities of light reflected, then he will be able to claim that in some cases the texture of the surface, not its form, plays the principal part in the resulting phenomena.

3. Finally, there is no reason to doubt that the cause assigned for the convexity is an adequate one. Every blacksmith knows that while a heavy blow of the hammer will bend a bar of malleable iron downward, the same bar, under a series of light blows, will rise beneath the hammer and become convex. The reason is that the light blows, not overcoming the elasticity of the bar as a whole, beat out the surface layer laterally and the bar bends upward to give room for this lateral expansion. Rolling produces in still higher degree, and rubbing in the highest degree of all, this surface effect. On the other hand it is, of course, resisted by the mass of the metal in proportion to its thickness and consequent rigidity. Now, while all the details of Japanese mirror-working are, as Mr. Mezger has observed, not thoroughly known, it *is* known that one stage of the process consists in rubbing by hand with, I believe, a wooden tool—precisely the operation to produce a convexity of the thinner parts of the plate.

Unless this three-fold demonstration can be impugned in some material particular, it seems to me that it renders the doubtful hypothesis of a chemical and molecular peculiarity of the substance of the magic mirror quite unnecessary. R. W. R.]

3. *The Coloring of Metals and Alloys.*—This has been brought by the Japanese to a high state of perfection. Only very simple objects of no great value are painted, usually in brown. All costly work has to undergo coloring processes which often take much time—six months or more. There are many methods in use.

A beautiful alloy is the *shakudo*, consisting of 93 to 97 per cent. of copper and the rest gold. This is exclusively treated with sulphur in the form of sulphides of the alkalies, under which it acquires a splendid dark blue color, with a high polish. The *shibu itsi*, an alloy of one-fourth sil-

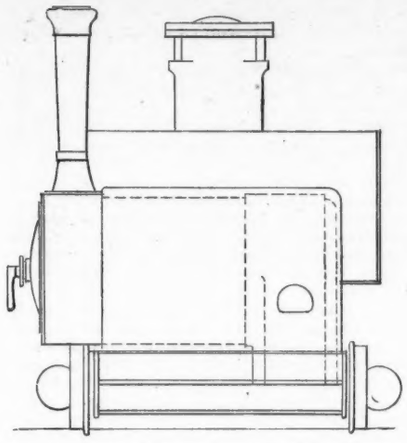


FIG. 4.—FRONT ELEVATION OF 12-TON LOCOMOTIVE LADLE-CRANE. LOCOMOTIVE END.

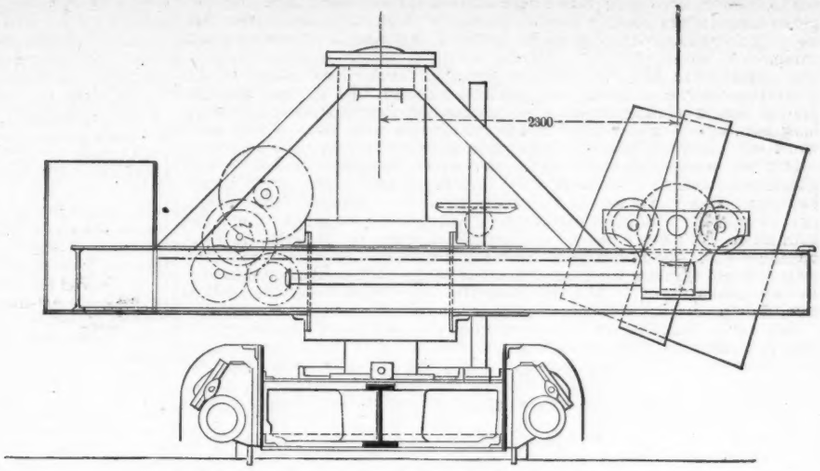


FIG. 5.—FRONT ELEVATION OF 12-TON LOCOMOTIVE LADLE-CRANE. CRANE END.

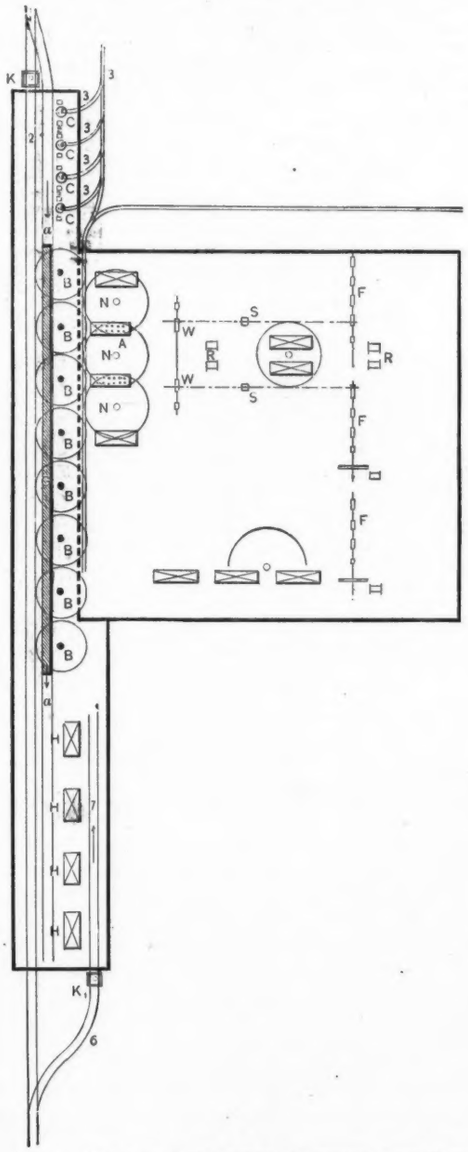


FIG. 1.—PLAN OF A COMBINED CONVERTER AND OPEN-HEARTH WORKS.

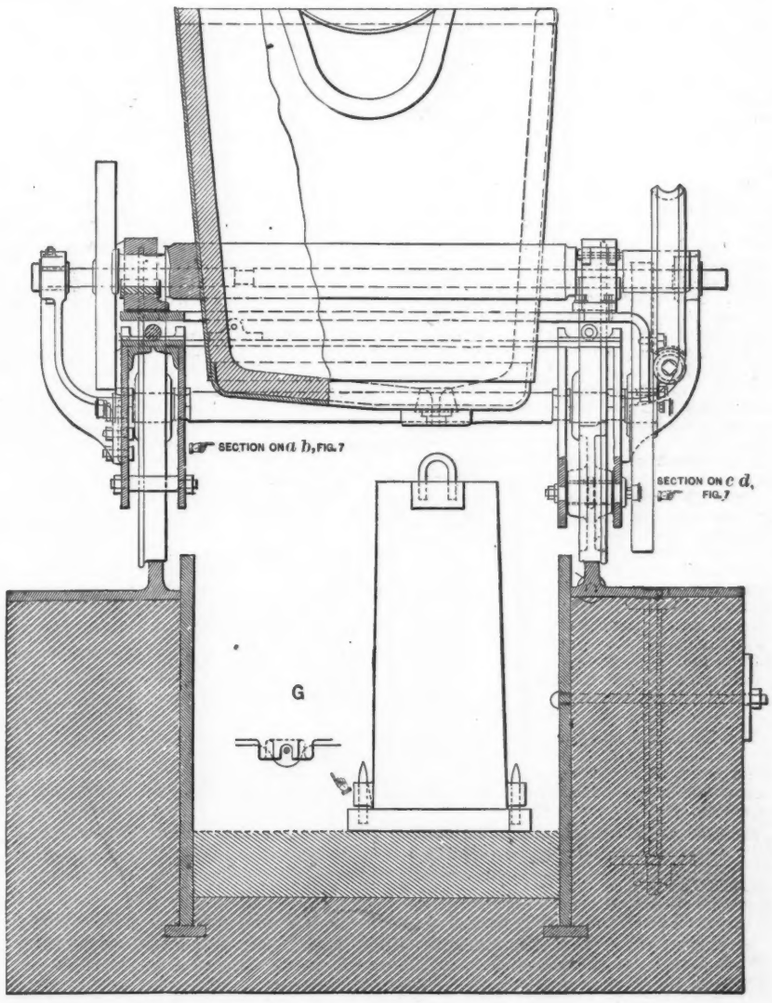


FIG. 6.—ELEVATION AND VERTICAL HALF-SECTION OF 12-TON CASTING LADLE AND CAR.

ILLUSTRATIONS SHOWING IMPROVEMENTS IN GERMAN STEEL WORKS AND ROLLING MILLS.

ver and three-fourths copper, is colored with iron vitriol and copper-vitriol in a way which scarcely permits chemical investigation—the sap of certain plants plays also a certain rôle in this treatment. The objects are laid in one solution, then in another; then dried, heated and laid in other solutions, and the *shibu itsi* finally presents a variety of very agreeable and elegant gray and brown colors. In a similar way brass, copper, etc., are variously colored. There are also alloys of gold with silver and copper, presenting an astonishing number of different natural colors. These are mostly used for inlaid work.

The Japanese also etch metallic surfaces to produce a protective sur-

face resisting corrosion; but I cannot say that their work in this line, so far as I have seen it, is of a high order, either technically or artistically. Judging from the pieces thus treated, the process appears to be hasty and crude.

4. *Sculpture in Metals.*—The Japanese art of carving iron and all metals, as well as ivory, etc., is surprising in its perfection. In Europe we have known similar works only from the mediæval artists of Florence, Nuremberg, etc., whose master pieces are found in many museums. All modern work of this kind, except a very few carvings in ivory, is not fit to be compared, for elegant conception, accurate and beautiful modeling and absolutely faultless execution, with the Japanese carvings, particularly in iron. There is especially one piece of armor, the *truba*, or sword-hilt, which seems to have been chosen for the exhibition of the most wonderful variety of designs in various materials. Every dealer in Japanese goods has specimens, and they well repay examination. I never fail to find in each new piece new reason for admiration. It is my good fortune to possess a classified collection of Japanese sword-hilts, comprising more than 100 pieces—the only systematic and representative collection of which I have knowledge. It illustrates all the different methods of the metal art industry of Japan with such richness of detail that 10,000 separate drawings would scarcely present the distinct designs involved in its decorative parts. Forgings, castings, etchings, carvings, etc., are all exhibited in these *truba*, as well as the arts described below.

5. *Mechanical Combinations of Metals.*—The simplest decoration of this kind consists of small dots of gold on iron and silver, representing dew-drops on leaves. In more elaborate work the ribs of the leaves are represented by inlaid gold wire. Another method consists in giving to an iron piece a grooved surface by cutting with a file, laying gold and silver wires (often in the fashion of Venetian filigree-work) on the surface, and so hammering or pressing down the wires that part of the metal enters the file-cuts, which, being smoothed by the pressing and hammering, hold it fast. Sometimes patches and shreds of the decorative metal are laid on and fixed at the edges only; sometimes drawings are executed in pieces of metal of different colors, the whole presenting a surface so smooth that it is impossible to detect how the pieces are united together. Even a magnifier reveals no trace of a fissure or of soldering. Sometimes these inlaid or attached decorations represent insects carved in *shakudo* (the goid-copper alloy) with wonderful fidelity to nature, every member executed faultlessly, down to the facets of the eyes and the fine texture of the wing covers. Or flowers or other objects are similarly employed, exhibiting the same delicacy; and the figures of the heroes of Japanese history find their place among these wonderful metallic decorations.

6. *Combinations of Metals with other Substances* —The covering of metals with lacquer calls for no special remark. That lacquer, not being brittle, expands and contracts with the metal under varying temperature, is not surprising. But my collection contains an iron *truba*, partly covered with a blue glass, which is undoubtedly hundreds of years old, and is perhaps one of the early experiments with which the art of making *cloisonné* wares began; and I confess that it is a matter of wonder to me how that piece was made; how the glass was composed so as to have the same co-efficient of expansion as the iron on which it has been molten.

The *cloisonné* proper, as we see it in plates, vases, etc., is also very curious. The object is made of very thin sheet brass, and flat brass wires, bent according to the outlines of the drawing (previously made on paper) and according to the surface of the object, are affixed to it by means of highly fusible glass, the object and the wires being fused together with this flux in a kind of muffle. Then the compartments formed by the partitions of flat wire, standing on edge not higher than one millimeter, are filled with powdered glass of different vivid colors, and this is fused in another operation, the whole being finally ground smooth and polished. There are many surprising features in this method. The melting point of the glass must of course be lower than that of the brass. The co-efficient of expansion of the glass must be the same as that of the metal. The glass must melt together without bubbles, and yet must not become so fluid as to run down on vertical surfaces; and, finally, it must adhere to and unite with the surface of the metal.

I am far from thinking that the foregoing sketch, comprising only what I have personally observed and learned in Japan, covers the whole field of methods and processes employed for decoration by the metal-workers of that fascinating country. The writing of it has, however, been to me at least the means of recalling with fresh pleasure the many happy hours I have spent in the museums, shops and art-exhibitions of Tokio; and I shall be content if my readers are stimulated to similar studies on their own account.

Mr. Berthelot has provedby experiments that there is no foundation for the belief that the earth absorbs and retains more carbonic oxide than other gases, an hypothesis offered to explain several cases of asphyxiation which have occurred when miners went into a level shortly after an explosion.

Australia.—The Stock Exchange of New South Wales has recently been organized under very favorable auspices at Sydney. The new institution is an innovation in that any one desiring to be present during 'change can do so on payment of an annual subscription of £3 3s. Since its opening the exchange has done a big business, and keeps its members and subscribers fully posted up to date on all mining matters.

Fluorspar for Optical Instruments.—In a paper read before the British Association, Professor Silvanus Thompson dwells upon the remarkable advantages that colorless fluorspar, which is unfortunately much rarer than is generally thought, offers for optical instruments. The merit of having discovered its low dispersive power and other peculiarities belongs to Doctor Abbe. Professor Thompson has utilized such fluorspar for direct vision polariscopes by combining two outside prisms of fluorspar with one of Iceland spar between, and also dense flints with fluorspars. Such instruments are very convenient for an examination into dispersion and polarization.

Labor Contracts in France.—The *Journal Officiel* has just published the new French law according to which any person employed can, at the expiration of the contract, demand and, under the penalty of indemnity, obtain from his employer a certificate stating the time when the engagement commenced to take effect, that of dismissal, and the kind of work which he was employed to perform and did perform. This reform abrogating the regulations relating to the workman's booklet brings the contract between employer and employed, together with all it involves, under rules of the common law. The contract can be worded in any form which the parties to it may see fit to use.

Oxidation and Magnetic Properties of Manganese Steel.—Drillings of manganese steel, with 25 per cent. and less of manganese, prove magnetic after being heated, according to Mr. L. T. O'Shea, in a paper recently read before the British Association. The cause seems to be an oxidation resulting in the formation of magnetic oxide of iron. When this oxidized steel is reduced by heating in hydrogen, the drilling appears powerfully magnetic, probably because the former iron-manganese alloy has been destroyed, and metallic iron and manganous oxide, MnO, have been formed. Manganese is very susceptible to oxidation, but the determination of the exact proportions of the two oxidized metals is no easy matter. Filings show magnetism after heating, because the oxide coating adheres to the filings; when manganese or steel masses are heated the oxide scales off and leaves the mass free from oxide.

In an article about Mexican meteorites and widespread meteoric showers, in *The Mineralogical Magazine and Journal of the Mineralogical Society*, London, Mr. L. Fletcher describes the Bonanza masses as 14 ponderous masses of native iron, the largest of which rises upward of 4 feet above the ground, having the form of a beehive, being 5 feet in diameter where it enters the soil, into which it descends for an unknown depth. The Butcher masses consist of eight pieces, varying from 290 pounds, which is the smallest, to 654 pounds, which is the largest, making a total of nearly 4,000 pounds. Before the explosion the weight must have been much greater. The Sanchez estate mass weighed 252 pounds. The Fort Duncan mass weighed 97¼ pounds. A mass estimated to weigh 4,000 pounds, and which was an uncut mass of meteoric iron, is preserved at Washington, in the United States National Museum. It was exhibited among Mexican minerals, and was said to have been brought from the State of Chihuahua. Mr. Fletcher concludes that if the masses really belong to a single fall the maximum dispersion is 66 miles.

Cost of Dredging.—In an article on dredging operations in the East *The Engineer* states that the cost of dredging in Portsmouth harbor, which more than ten years ago was eight pence per cubic yard, has now been reduced to three and one-half pence Similar reductions have been made in the United States, Canada and the West Indies, due entirely to improvements in dredging machinery during the past ten years. In India and the Eastern colonies, however, there are no signs of such reductions, the cost per cubic yard being as high as from 1s. 6d. to 4. 6d. per cubic yard. The reason as given by *The Engineer* is that dredges twenty, thirty and even forty years old are employed upon such work in the East. In one case a dredge was stopped for repairs 120 out of 180 days of employment. These unfortunate machines, it says, "are kept wheezing and grinding along years after they should have been broken up for old metal."

Method of Determining Quickly Phosphorus in the Siemens Basic Furnace.—Of the cooled sample 0·2 g. is dissolved in 3 cm.³ of aqua regia, to which are then added 3 cm.³ of water and afterward ammonia in sufficient quantity to precipitate all the iron. The precipitate is redissolved by nitric acid poured on drop by drop until complete clarification; ten drops of Fresenius' malybdic solution are added, after which the solution is transferred to a vial 50 mm. high and 12 mm. in diameter. A series of standard vials containing 0·02, 0·03, 0·04, 0·05, etc., of phosphorus, enables the operator, by comparing the opacity of the liquids, to ascertain the quantity of phosphorus contained in the sample. This method requires only a few minutes, and gives reliable information of the progress of the dephosphorization.

PATENTS GRANTED BY THE UNITED STATES PATENT OFFICE.

The following is a list of the patents relating to mining, metallurgy, and kindred subjects, issued by the United States Patent Office:

TUESDAY, NOVEMBER 4th, 1890.

439,619. Cut-off Valve Gear. George R. Babbit, Providence, R. I.
439,634. Steam Engine. Sidney T. Bruce, Marshall, Mo.
439,656. Miner's Lamp. George Hayes, Girardville, Pa.
439,659. Core Box. John T. Hill and John P. McGuire, Cleveland, O.
439,660. Feed Screw and Nut for the Same. August Holmquist, Chicago, Ill., Assignor to himself and Charles A. Durphy, same place.
439,663. Steam Generator. David Hurst, Mansfield, O.
439,664. Condenser for Steam Engines. James B. Hutchinson, Butte City, Mont.
439,665. Wire-nail Machine. Prentiss J. Kent and William F. Bancroft, Worcester, Mass.
439,692. Belt Shifter. John M. Sailer, Milton, Assignor to John Barlass and Robert Barlass, Janesville, Wis.
439,695. Extractor for Removing Air, Grease and Sediment from Feed-Water. Horace See, New York, N. Y.
439,704. Steam Engine. Charles W. Vanderheyden, Grand Haven, Mich., Assignor of one-half to Maud H. Cowles, Englewood, Ill.
439,705, 439,706. Furnace. Robert L. Walker, Boston, Mass.
439,713, 439,714, 439,715. Machine for Making Balls. William H. Wright, Buffalo, N. Y.
439,749. Boiler Feeder and Regulator. Robert H. Kersey, Lebanon, Ind.
439,750. Steam Engine. Joseph H. Moore, Altoona, Pa.
439,753. Boiler Furnace. Sebastian Runser, Sharon, Pa.
439,756. Compound for Preventing Incrustation in Boilers. William Blackburn, Marion, Ohio, Assignor of two-thirds to Eber A. Gurley, same place, and Walter Shull, Galion, Ohio.
439,757. Rail Joint. Cyrus M. Carnahan, Coraopolis, Pa., Assignor to Alfretta Carnahan, same place, and Joseph C. Young, Robinson Township, Pa.
439,761. Boiler Bottom. Johnson McGinnis, Emlenton, Pa.
439,788. Apparatus for Supplying Pure Water to Steam Boilers. Fred L. McGahan, Indianapolis, Ind.
439,812. Mining. John W. Crites, San Francisco, Cal.
439,814. Steam Boiler and its Furnace. Edward J. Duff, Glasgow, Scotland.
439,876. Air Compressor. Ebenezer Hill, South Norwalk, Conn.
439,878. Machine for rolling tubes. Charles Kellogg, Findlay, Ohio.
439,924. Mechanism for Operating Tapping Bars. Henry Aiken, Pittsburg, Pa.
439,925. Feed Table for Rolling Mills. Henry Aiken, Pittsburg, Pa.
439,961. Ore Washer. La Fayette W. Lewis, Milnes, Va.
439,962. Ore Concentrator, Separator, and Washer. Luther Look, Ketchum, Idaho, Assignor to himself, Joseph Montgomery and George M. Snow, same place.
440,028. Scraper for cleaning Steam Boilers. Taylor Glover and William Armstrong, Maryville, Mo.
440,038. Oil Flame Furnace. Thomas M. Jarmain, London, England.
440,097. Process of Forming Steel Ingots in Sectional Molds. James B. D. Boulton, Jersey City, N. J., Assignor to the Solid Ingot Company, of New Jersey.
440,098. Process for Burning Hydrocarbon Fuels. John Burns, Rochester, Assignor of one-half to John H. Reynolds, Troy, N. Y.
440,103. Cut-off for Steam Engines. George Fussell, Jr., Lockport, N. Y.

PERSONAL.

Mr. H. R. Slauton has been appointed general manager of the Bangkok-Cora Belle Mining Company, of Leadville, Colo.

Mr. W. de L. Benedict, mining engineer, of New York, has gone to Virginia on professional business in the interest of Baltimore capitalists.

At a regular monthly meeting of the Granite Mountain Mining Company, held in St. Louis on the 29th ult., Mr. Thomas O. Hyman, formerly assistant secretary, was elected secretary vice Mr. John T. Field, resigned.

Mr. O. W. Potter, formerly connected with the Illinois Steel Company, of Chicago, has been elected director of the Metropolitan Iron and Land Company vice Mr. R. C. Hannah, of Chicago, resigned. Mr. L. J. Petit, of Milwaukee, has been elected treasurer.

Mr. J. C. Smock, who has been Assistant in charge at the State Museum in Albany, N. Y., has now entered upon his new duties as State Geologist of New Jersey. His address in the future will be Trenton, N. J. Professor Smock was long connected with the geological survey of New Jersey under the late Professor Cook, and is an excellent selection for carrying on the important work of the survey.

Mr. John Stanton, secretary of the Atlantic and Central Mining Companies, has returned from a visit to the copper mining district of the Lake Superior region, Mich. He reports that the properties are in good condition, and attributes the cause of the recent decline in the price of the copper stocks to the stringency in the money market which has caused those persons who bought stocks on margin last spring to sell at reduced values.

OBITUARY.

John Scott, the inventor of the locomotive cab and "copper wire joint," died of heart disease in Baltimore, Md., on the 2d inst.

James Farrell, general manager of the Imuris Mining Company, was killed in Nogales, Ariz., on the 26th ult. Mr. Farrell was generally known in Arizona and California.

Archibald Stewart Bartow, a broker in chemicals in this city, died on the 31st ult., in Astoria, N. Y. Mr. Bartow was connected with the firm of Butterworth & Judson, manufacturing chemists.

The *Iron and Coal Trades' Review*, of London, announces the death of Allan Gilmour, secretary and manager of the Maryport Iron and Steel Company, and of H. L. Euthoren, owner of extensive iron works at The Hague.

William P. Brush, aged 41, died on the 5th inst., in this city. He was born in Greenwich, Conn., where he lived for many years. He was a mechanical engineer of great skill and left uncompleted several mechanical appliances.

James Gregory, a well-known brass and copper founder and finisher, of this city, died on the 6th inst. He was a native of Connecticut and was 63 years old. Before he had reached his 20th year he assisted his grandfather, William Buckley, founder of the brass and copper house, which has now existed for 85 years. On the death of Mr. Buckley he assumed full control of the business, which, under his name, has enjoyed unbroken prosperity and is now one of the oldest of its kind in the State.

INDUSTRIAL NOTES.

It is reported that a company has been organized, for the purpose of manufacturing at Pittsburg, Pa., copper wire for telegraphic service.

Mr. F. T. Aschman, of Sharon, Pa., has just contracted for a five-ton open-hearth steel melting furnace, and is fitting up a foundry and machine shop to make steel castings of all kinds. He hopes to have the plant in working order soon after Jan. 1st, 1891.

The Virginia Steel, Iron and Slate Company has been organized with F. T. Anderson, of Richmond, as president. The capital stock is $2,000,000. The company owns from 10,000 to 20,000 acres of land surrounding Howardsville, Va. It will build the town of Logan City.

The Buchanan Wood Manufacturing Company has been organized at Buchanan, Va., with a capital stock of $150,000. The officers are: J. D. Weeks, Pittsburg, president, W. C. Dawson, Virginia, vice-president and manager; Col. E. Dillon, secretary and treasurer.

Messrs. Carnegie, Phipps & Co.'s rod mill at Beaver Falls, Pa., turned out 205,000 pounds of finished rods during a single day's turn. The nail mill of the same plant also made its biggest record on the same day, by turning out 1,722 kegs of finished nails on 112 machines.

The Monitor Steam Generator and Manufacturing Company has been incorporated at Roanoke, Va., with a capital stock of $250,000. The company will manufacture steam generators. H. M. Engle is president; George M. Bain, vice-president; H. C. Musser, secretary and treasurer.

The Otis Iron and Steel Company, of Cleveland, O., has given notice to the employés in its Bessemer department that after November 1st men who have heretofore been required to turn out 70 tons as a day's work will be required to furnish 100 tons. This is equivalent to a 30 per cent. reduction of wages.

Under the title of "Special Sectional Illustrated Catalogue," Mr. B. F. Sturtevant, of Boston, Mass., issues a book which will be found to be valuable to those interested in drying and heating apparatus. The pamphlet also includes a description of the many useful inventions controlled by Mr. Sturtevant. The steam fan and hot air blast machines are treated of at length, as are the processes of drying and conveying lumber. To those concerned this publication will be found full of interesting and useful information.

The Thomson-Houston Motor Company, of Boston, has combined utility and advertising in its latest effort to call public attention to its method of transmitting electrical power. This takes the form of a handy little annotated map of Massachusetts, including another of Boston and vicinity, and another of Boston itself. On the back of it is printed a history of the Bay State, with vital statistics, guides to hotels, railroads and such other matters of interest to strangers visiting there. The whole folds up into a small compass in a neat cloth cover, on which the Thomson-Houston Company prints the particulars of its business.

A great deal of information in a very small compass will be found in a twelve-page catalogue recently issued by the Mason Regulator Company of Boston. In it the company prints in juxtaposition illustrations of its various specialties and plan drawings, showing every detail of the mechanism. The drawings embrace an air-brake pump regulator, a valve for reducing steam and air pressure, a pump pressure regulator, a steam damper regulator, a pump governor, a balanced valve, a lever valve and a locomotive reducing valve. By the aid of accompanying lucid descriptions, the working of the mechanism of the various contrivances is made plain even to the layman.

CHICAGO INDUSTRIAL NOTES.

(From our Special Correspondent.)

Among Chicago's new enterprises, none are more promising than the founding of the new manufacturing town of Harvey, situated at 151st street, 20 miles south from the center of the city, on the Illinois Central and Grand Trunk railroads, immediately south of the city limits. The Harvey Steel Car Company, the Automatic Mower and Manufacturing Company, the Buda Foundry and Manufacturing Company, Craver, Steele & Austin, the Grinnell Wagon Works, the Conner Core Drilling Machine Company, all have plants here, already in active operation, with negotiations for sites for several other industrial plants now pending. The town occupies ground 26 feet above Chicago datum or lake level, and from 21 to 28 feet above the Calumet River. This embryo City was only started in July last, and would seem to be the outcome of a necessity.

The Grant Locomotive Works versus Mrs. Hetty Green.—After a delay of nearly a year two suits brought by Mrs. Green against the Grant Locomotive Works have just been decided in favor of the company. In December last, it will be remembered, the Grant Company, through its representative, purchased at Master's sale a tract of 651 acres for a site for its works in the town of Cicero, section 21, bounded by Twelfth, West Forty-eighth, Twenty-second and West Fifty-sixth streets; $602,000 was the figure paid for the property, subject to a claim of $91,000. Mrs. Green immediately began suit upon the ground of various claims set up to annul the sale. The Supreme Court of Illinois, from which there is no appeal, has now affirmed the decree of the lower court affirming the Master's sale. Mrs. Green again attacked the sale of the land by a redemption suit in the United States Court which has been pending at Springfield, and which now denies her the right of redemption. This litigation has retarded improvements in Cicero very much of late, but now the ownership of the celebrated section 21 being conclusively settled, the Grant Locomotive Works will proceed to erect its plant at once according to the original plans; this means an outlay of about $1,000,000, and the employment of 1,200 men; the annual finished output of the plant will be 250 locomotives; the old Grant Works, at Paterson, N. J., are to be discontinued. These two legal decisions adverse to Mrs. Green mean also a great deal for the future development of the "west side" of our city; the Grant Company particularly is to be congratulated.

Another magnificent office building for Chicago.—The corner stone of the Temple National Building of the Woman's Central Temperance Union was laid last Saturday with appropriate and imposing ceremonies. This superb structure will rival in beauty and grandeur its near neighbors, the Rookery, Board of Trade, and many others; its rentals will reach $250,000 per annum, in addition to making a permanent home for the society that builds it. Many offices are already engaged by banks and business firms. The lot on which the temple will stand has a frontage of 190 feet on La Salle by 90 feet on Monroe street. It is owned by Marshall Field, and is worth at a low estimate $1,000,000. That gentleman leased it to the W. C. T. U. for 200 years, without valuation, at an annual rental of $46,000. Mr. Field charges no rent for the first eighteen months. The cost of the structure is estimated at $1,100,000. Of this amount $600,000 has been raised in stock, and it is to be bonded for $600,000 more, allowing a surplus of $100,000 for incidentals. Stock has been taken by those willing to accept five per cent. for their money, allowing the W. C. T. U. the privilege of buying it back at par at five, or within twelve years. The building will be 13 stories high, and ready for occupancy May 1st, 1892.

MACHINERY AND SUPPLIES WANTED AT HOME AND ABROAD.

If any one wanting Machinery or Supplies of any kind will notify the "Engineering and Mining Journal" of what he needs, his "Want" will be published in this column.

Any manufacturer or dealer wishing to communicate with the parties whose wants are given in this column can obtain their addresses from this office.

No charge will be made for these services.

We also offer our services to foreign correspondents who desire to purchase American goods, and shall be pleased to furnish them information concerning American goods of any kind, and forward them catalogues and discounts of manufacturers in each line, thus enabling the purchaser to select the most suitable articles before ordering.

These services are rendered gratuitously in the interest of the subscribers and advertisers; the proprietors of the "Engineering and Mining Journal" are not brokers or exporters, nor have they any pecuniary interest in buying or selling goods of any kind.

GOODS WANTED AT HOME.

1,130. Shingle mill, bolter and several crosscut saws. Alabama.

1,131. Complete outfit for a laundry; 6 H. P. automatic engine, with 10 or 12 H. P. boiler; wood burner preferred. Florida.

1,132. Necessary machinery to double capacity of water-works in North Carolina.

1,133. An automatic emery wheel for grinding plane knives, a mortising machine, tenoning machine, self-feed rip saw and a self-feed hand edger. Arkansas.

1,134. A 24-inch lathe, 10-foot swing and a drill press. West Virginia.

1,135. A pump, driven directly by water power, that can be used advantageously to pump to a slight elevation the sewage of a town that has an abundant water supply under high pressure. Rhode Island.

1,136. A simple retort to make charcoal; capacity about 1½ cords of wood. Florida.

1,137. Second-hand power bending rolls, 72 to 76 inches between housings, to bend three-eighths inch steel plates, full width. South Carolina.

1,138. A pair of Cornish crushing rolls, new or second-hand. Illinois.

1,139. Steel tubing ranging in sizes from 6 to 12 inches in diameter. New York.

1,140. Machinery for making iron kegs. Pennsylvania.

1,141. About 35 tons of 25-pound second-hand rails; also light second-hand locomotive, with 20 gravel cars. New York.

1,142. A complete outfit for a canning factory. Tennessee.

1,143. Dynamo and small electric light outfit. North Carolina.

1,144. A full line of wooden bowl and chair machinery. Tennessee.

1,145. A 40 H. P. engine, a 50 to 60 H. P. boiler, belting, shafting and all appliances and supplies necessary for quite extensive terra cotta and fire brick works. Virginia.

1,146. Three engine lathes, chain feed, 12 inches × 6 feet, 15 inches × 7 feet, 18 inches × 6 feet. Tennessee.

1,147. Twine making machinery, that will make heavy brown twine from flax, 4 strands, and sewing twine from hemp, 4 strands; also state whether the same machinery will make twines of cotton and of various weights of hemp, flax and cotton. Give particulars of cost, capacity, weight and of power and space required. Illinois.

1,148. Price lists and circulars of venetian blinds. Florida.

1,149. A complete brick-making and tanning outfit. North Carolina.

1,150. Two engines, a saw mill, steam pumps, steam drills, barrel machinery, hoisting machinery, etc., for a company that is going in the lime business on a large scale. South Carolina.

1,151. Lathe, planer, drill press, chain pulleys, emery wheels and cutting saws; also ladle of six

tons capacity and other general steel foundry supplies. Pennsylvania.

AMERICAN GOODS WANTED ABROAD.

1,119. Samples and prices of fencing wire; several car loads will probably be wanted. Mexico.

GENERAL MINING NEWS.

Shipments of iron ore from the mines of the districts mentioned below for the season up to and including October 29th were as follows:

		Tons. 1890.	Tons. 1889.
Marquette, Marquette District		1,237,993	1,295,468
St. Ignace, " "		15,911	45,556
Gladstone, Marquette District		6,183	16,901
" Menominee "		69,881	42,669
Escanaba, Marquette "		1,124,000	896,339
" Menominee "		1,769,712	1,491,713
" Gogebic "		257,830	259,995
Ashland, " "		2,001,714	1,427,796
Two Harbors' Vermillion District		*817,311	758,880
Total, tons		7,300,545	6,235,308

*Up to Oct. 30th.

ARIZONA.

A syndicate, composed in part of Denver gentlemen, including in their number Mr. C. F. Meek, manager of the Union Pacific and Gulf railroads, George J. Boal, Col. Neville, Mr. C. N. Lewis, also Mr. L. H. Jackson of Colorado Springs, according to reports has been organized with a large capital for mining operations in Arizona. The syndicate has had Mr. E. K. Buttolph in the territory for some time looking after its interests. Important developments are expected.

(From our Special Correspondent.)

PRESCOTT, October 28.

Mining in the Territory of Arizona is now carried on under the greatest difficulties. A lack of cheap transportation is one of the chief drawbacks. There are two transcontinental lines of railroad passing from east to west through the great territory at a considerable distance from the principal mining districts. There are also two local roads—one extending from the Southern Pacific northward to Phœnix, the other southward from the Atlantic & Pacific at Prescott Junction to the town of Prescott. The Prescott branch approaches within a few miles a rich and prosperous mineral section, notwithstanding, the distance from most of these mines to the railroad necessitates an expense in transportation ranging from $5 to $25 a ton for ore or concentrates. This heavy expense, together with the charges of sampling, railroad transportation to eastern smelters, and the reduction charges, necessitates a high grade of ore to insure a profit. Ordinarily, ores carrying less than $50 a ton are allowed to remain on the mine dumps. Until suitable means of transportation are afforded many deposits must either remain undeveloped or be worked on a ruinously narrow margin of profit. Reduction works located at points easy of access, handy to fluxes and fuel, and constructed on a large scale are indispensable to development. There are in this State an abundance of ores which can best be treated by the smelting process. They are not dry ores and contain iron and zinc to the exclusion of copper or lead, making them the basest of base ores. Iron sulphides, zinc blende and gray copper are far more plentiful than carbonate of lead or galena, though the latter does occur in many localities, although not abundantly, unless it be in the Grand cañon of the Colorado. This district, however, is comparatively undeveloped. The ores which occur most abundantly require careful roasting and large amounts of fluxing material. Colorado coke is the cheapest, and Trinidad the nearest source of supply for that essential fuel.

High grade lead ores must be obtained from the mines of the territory which furnish comparatively small amounts, or must be shipped in from other districts. Limestone is present in abundance.

The hematite deposits are said to exist in the territory in small quantities. There are scores, yes, even hundreds, of mines and encouraging prospects in Yavapai county alone, where the ore is an iron sulphide with little other admixture, which assays from $15 to $40 a ton. Some of these ores can be readily and cheaply concentrated from 3 to 10 into 1, but usually the percentage of sulphides exceeds 30 per cent., and often economical concentration is impossible.

One drawback to the development of the country is the fabulous price asked for claims. Prices are seldom based on real values, but are gauged partly by the appearance of the would-be investor or the needs of the bonanza owner.

During the writer's five months' sojourn in the territory he has not heard of a sale that has been actually consummated involving an investment of over $2,000. Several claims have been bonded; of these, some are still under bond and others have been given up. During the past five months a great many mining men from California, Colorado, eastern and western states, have visited the territory, going away disgusted at the avariciousness and fool-hardiness of the prospectors.

At the present time Arizona sorely needs capital, energy and skilled metallurgists. The deposits are here, and they possess great value, but their owners, in order to realize, must at least meet the investors half way.

MOHAVE COUNTY.

SAN FRANCISCO, Oct. 30.

FLORES.—Three shifts are at work sinking the shaft. There are four feet of ore in the shaft that shows well in coarse free gold.

KANAWHA BELL.—A two-foot vein of ore has been exposed in this mine after sinking 50 feet and just at water level; it will carry seven ounces in gold.

PIMA COUNTY—QUIJOTOA DISTRICT.

THE CROCKER, PEER, PEERLESS, WELDON.—Mining companies have executed a large amount of prospecting work, and, according to reports, large ore bodies are in sight. The mill will be started very soon and it is believed will have a steady run.

YAVAPAI COUNTY.

EMPIRE.—The strike which was made on a drift from the bottom of the new shaft is at a depth of 150 feet. The pay streak is two feet wide, and is said to be ore of a high grade.

ONYX.—Aaron Mason, one of the original owners of the Silver King mine, and G. A. Smith, of Los Angeles, have a contract for the sale of this property, and have left for the East for the purpose of disposing of it. The deposit of onyx is very extensive. The rock lies in laminated strata, the layers being from a few inches to two feet thick. At one place where there is a break in the formation it can be traced to a depth of 50 feet.

SARAH JANE GROUP.—This group of mines, owned by C. A. Bush, pays $40 per ton by arastra process. The shaft is 87 feet deep, with a vein 20 inches in width.

YUMA COUNTY.

MONITOR MINING AND INVESTMENT COMPANY.—This is a Missouri corporation. C. S. Maslin, formerly of the Wabash Railroad at Moberly, Mo., has arrived on the ground to superintend the erection of the machinery, pump-house and other necessary buildings. All requisite materials are to hand, and work will be pushed as fast as possible. A large force of Indians are busily at work on the ditch, connecting with the Colorado River.

ARKANSAS.

LOGAN COUNTY.

ELK CREEK MINING COMPANY.—This company with a capital of $2,000,000 has filed articles of incorporation. The officers are John A. Van Pelt, President; George D. Dean, Vice-President; F. W. Wampler, Secretary and Treasurer. The company owns the Hot Springs mines Nos. 1 and 2, and the Buffalo lode, all located in Logan County, and said to be promising properties.

CALIFORNIA.

(From our Special Correspondent.)

SAN FRANCISCO, Oct. 30.

The annual meetings of the following mining companies will be held during the month of November: Mineral King Mill and Mining Company, 419 California street, 3d; Great Western Quicksilver Mining Company, 328 Montgomery street, 5th; Confidence, 414 California street, 14th; Bodie Tunnel, 303 California street, Summit Mining Company, Nevada Block, and Occidental Consolidated, Nevada Block, on the 17th; North Gould and Curry, 331 Montgomery street, and Challenge Consolidated, 329 Pine street, on the 20th, and Kentuck, 310 Pine street, on the 26th.

AMADOR COUNTY.

PLYMOUTH CONSOLIDATED GOLD MINING COMPANY.—We published last week the financial statement of this company. We herewith give the remarks by Mr. H. W. Lazelle, secretary of the company, in his circular letter to the stockholders: "The body of ore encountered last May on No. 2 level was remarkably deceptive. We struck it at the place where it was largest and richest. All the indications were favorable to the supposition that a very valuable chimney of ore had been found. Preparations were made for extensive operations. Greatly to our disappointment, further work showed that what we supposed was an extensive deposit was only a pocket, going up but a short distance and down only a few feet. The width, too, varied. While working on this we mined the rock on No. 3 level, mixing them in the mill. The latter was very low grade, while that on No. 2 was excellent in quality though so limited in quantity. With the two grades mixed we have produced fair results, and have been able to increase our cash on hand. The ore is nearly worked out, and should we find nothing more soon, the mill will again be idle. But we are pushing our exploration work vigorously and hope to find sufficient to keep the stamps running until larger bodies are discovered. The company owns a large area that has never been explored. On this ground the indications of pay rock are favorable. Two tunnels are being run, one on the lode line and one about 180 feet east. The latter is a continuation of the rock which has recently been worked out. A letter just received from the acting superintendent states that they have encountered fairly good pay rock in the latter, a narrow ledge as yet, but hopeful. He writes: We have three feet of vein in No. 2 east tunnel that looks quite favorable. The rock is hard and stratified with gold in small quantities. Frequent inquiries are made by stockholders as to future probabilities. To a person who has never been in a mine, and who is unfamiliar with mining operations, it seems strange that no forecast of the future is possible; that the officers and superintendent cannot prophesy the course of events with reasonable certainty. The only reply that can be made to this is, that in its very nature mining is an uncertain and hazardous business; that no one can see what is in a wall of rock, and that the most skillful miner cannot foretell what even the next blast will disclose. Hence, while years of disappointment may be the only reward of extensive prospect work, yet, any day, rich disclosures may be made that will furnish material for dividends for years to come.

[Knowing this peculiarity of mining one might suggest that prudent management calls for the accumulation of *reserves* of ore which will prevent these violent fluctuations of values. The management should know a reasonable distance into the future what the mine can do.—ED. E. & M. J.]

SUTTER CREEK.—The ten-stamp mill started up this week on an experimental run. On the 60 foot level the drift has been extended 240 feet and two upraises have been made to the surface through what is thought to be pay ore.

NEVADA COUNTY.

IDAHO.—Setting the new pump has caused a suspension of underground work. A large reserve of ore will keep the mill supplied until underground operations are resumed.

J. H. Hammond was summoned from this city to Grass Valley in the early part of the week to give expert testimony for the Idaho mine in the contest now in progress over the Maryland ground adjoining. Mr. Dusy is the proprietor of the latter property.

SANTA BARBARA.

LA PATERA.—The asphaltum deposit recently uncovered improves in quality as depth is obtained, while the quantity seems to be practically unlimited. It ranges from 60 to 75 per cent. pure asphaltum, and when compared with that obtained from Trinidad, the chief source of supply, which runs only 16 to 18 per cent., it will be seen that this bed of asphaltum is remarkably rich. Being situated within a few hundred yards of the ocean, and not far removed from the railroad, the question of easy shipment is already solved. The San Francisco Telephone Company has received a shipment of 30 tons, which is being used, without refining or other preparation, as an insulator in the underground trenches now being laid.

SAN BERNARDINO COUNTY.

SAN JACINTO ESTATE COMPANY, LIMITED.—Mr. J. H. Crossman, of San Bernardino, writes under date of the 10th inst. as follows: The managers of the San Jacinto Estate, Limited (tin)—the Temescal Tin District—have their development work in a good state of forwardness, and will soon be enabled to put on a large number of men. As the work progresses the mine shows constantly increasing resources of very rich ore. The office and quarters for staff are completed, boarding and lodging houses nearly ready for employés and reservoir dam in process of construction. The manager, Col. E. N. Robinson, has returned from England, and the construction of the mill, reduction and concentrating works will now be commenced. A branch railroad from South Riverside has been surveyed to the works for transportation of the ore and its product over the Santa Fé road to either a market or tin plate works, to be erected at some central point, probably Pueblo, Colo., or some other point where iron and fuel can be obtained and the manufactured product distributed. The additional duty imposed by the new tariff will materially assist the company and swell its dividends. This is not the only metallic product that San Bernardino county possesses. Ord mountain contains miles of copper, both as native and as sulphides, carbonates and oxides, as well as inexhaustible quantities of magnetic iron ore. Let the Union Pacific Railroad extend the lines of the Utah Southern through the desert region to a connection with the Atlantic & Pacific, so that Utah's coal could be laid down at some central point, where a smelter on a mammoth scale could be erected, and San Bernardino would rival Colorado in the production of both precious and base metals.

COLORADO.

ONTARIO AND CLIFF MINING COMPANY.—Articles of incorporation were filed on the 1st inst. by this company. The capital stock is $600,000. The promoters are Franc O. Woods, Charles S. Wilson and Edward C. Stimson.

BOULDER COUNTY.

GOLD KING MINING COMPANY.—When General Butler's party was at this property an exhibition run was made. The 40-stamp mill was run six hours on selected ore. The clean-up of four retorts showed, it is said, an aggregate of $24,000 for the run. Work has already been begun on a large electric plant. It is designed to run the mill and cars and furnish power for the drills. Water power will be used to run the dynamos.

EAGLE COUNTY.

FRENCH MOUNTAIN MINING COMPANY.—This company, under the management of Mr. W. H. H. Bowers, now owns all the old Gold Park company's property, and is doing the principa de-

velopment in that section. It is now engaged in changing the 20-stamp mill from a free milling affair to a concentrating mill. The new mill will be a large one, machinery and buildings being of a capacity of 300 tons per day, the concentrates from which will, for the present, be sent to the smelters. Surveys have been made for a gravity double track tramway, connecting mines with mill, and, during the winter, all will be got in readiness to put up in the early spring.

LAKE COUNTY.

BANGKOK-CORA BELLE MINING COMPANY.—It is the intention to sink the shaft and then drift out to the ore body, which starts from the lower end of the 500-foot level. The shaft is in white iron and lime. Extra provision is being made to take care of the water.

SILVER CORD MINING COMPANY.—The big incline on this company's mine is being pushed into the sulphide chute, and the James tunnel will be extended to cut the Mike and Starr ore body. As the present workings of the Cord already connect with those of the A. Y. and Minnie and Sellers, the near connection with the Mike and Starr will be an important development. It is reported that the Silver Cord people are preparing to build a large concentrator in California gulch, into which the ore of the workings will be run on a gradient of one foot to 1,000 by a double track tramway.

WOLFTONE MINING AND MILLING COMPANY.—This new company which has been formed to work the properties formerly known as the Agassiz Mining Company has a capital stock of $500,000 at $1 per share; 100,000 shares it is stated have been sold to the Standard Oil Company for $60,000, which sum is to be expended in sinking the new shaft at the north end of the property. The chief officers of the new company are Mr. E. B. Hendrie, Charles Toll and John McNeil, of Denver.

LARIMER COUNTY.

ELKHORN.—A test of 15 tons of rock taken from this mine was made recently at the Poudre City mill of the Zimmerman Brothers. It run $200 to the ton. The result has stimulated development operations to a marked degree; many shaft and tunnel contracts are being let.

PITKIN COUNTY.

Some people are wondering if competition will not arise between the Holden Lixiviation Works and the Schueler & Stockder Concentrator, says the Aspen *Times*. It will be seen at a glance, however, that these two enterprises cover different fields. The Holden works treat dry ores, while the plant that Schueler & Stockder are building is to concentrate lead ores. Thus the two mills will be a benefit to one another and stimulate developments in properties containing both lead and dry ore. Mr. Stockder is quoted as saying that in his belief there is ore enough around Aspen to supply ten mills of the same capacity as the one in which he is interested. He is introducing a new process which has been used only in Germany, and he has to bring most of his machinery from across the water. He has thoroughly experimented with Aspen ore, having taken 1,000 pounds or more ore and run it through the mills of the old country, and knows that his mill here will be a success. The mill is now well under way and the building is nearly up. It will not be many weeks till the concentrator is ready to receive ore for treatment.

IDAHO.

Reports state that the United States War Department has just completed a survey of Snake river, Idaho, from Huntington to the Seven Devils Copper mining region, a distance of 60 miles, and has found that it can be improved at a reasonable cost so as to be navigable for the greater portion of the year. The copper deposits of the Seven Devils district are claimed to be extensive. Heretofore they have been hard of access owing to high bluffs. With the river as a means of transportation the country is capable of great development.

KANSAS.

CHEROKEE COUNTY.

A special report shows that during the week ending October 25th the output of ore from the mining districts of Galena and Empire City was: Rough ore, pounds milled, 2,640,860; zinc ore, pounds sold, 1,125,000; lead ore, pounds sold, 100,720. Sales aggregated a total value of $16,282, and the total value of the output was $18,760.

MICHIGAN.

COPPER.

ALLOUEZ MINING COMPANY.—Mr. John Stanton, Secretary of this company, stated to a representative of the ENGINEERING AND MINING JOURNAL that there was no truth whatever in the rumors of an impending assessment, and that they probably emanated from Boston "bears." In regard to the progress made in the search for the Calumet conglomerate on the property (see ENGINEERING AND MINING JOURNAL, October 11th), he said they are drifting, and expect to get it in about 30 days. The October output was, approximately, 126 tons

ATLANTIC MINING COMPANY.—Mr. John Stanton, Secretary and Treasurer of this company, says the new shaft has not yet been completed. The Quincy vein, for which search was made, has not been struck on the property. The October output was 226 tons.

CALUMET & HECLA MINING COMPANY.—Hancock *Copper Journal*: "All the drums from the Hecla engine house have been removed and the room prepared for the reception of four 42 × 60 compressors. When this change is complete the Frontenac engine, 1,600 horse power, will be used for air compressing alone. From the appearance of things one would judge that the Superior engine was destined to the same use. If all the Calumet end is worked through the new upright shaft the appearances are that the Superior will have nothing to do except to run the electric plant and to compress air. The new rock house at No. 6 is working very satisfactorily. Work on the rock house at No. 8 is going on very slowly. There is a scarcity of good carpenters at the Calumet & Hecla on account of the immense amount of building going on. The foundation merely for the rock house at No. 7 is ready. Work on the new engine house and boiler house at the Red Jacket shaft is progressing steadily."

The product of the mine for October was 4,151 tons 50 pounds. This is said to be the largest monthly output in the history of the mine. It is understood that the company is negotiating for the sale of 10,000,000 pounds of copper.

FRANKLIN MINING COMPANY.—The October output of this mine was 306 tons.

HURON MINING COMPANY.—The October output was 95 tons 1,000 pounds.

KEARSARGE MINING COMPANY.—The mine produced 75 tons of mineral in October, against 71 tons in September and 90 tons in October, 1889. This makes 738 tons produced since January 1st, against 850 tons last year, a decrease of 112 tons.

PENINSULA MINING COMPANY.—This mine produced 60 tons of mineral in October, against 60 tons in September and 45 tons in August, making 604 tons produced since January 1st.

Concerning the explorations on this property an exchange offers the following: "The pit on the line of the Calumet conglomerate is down about 50 feet and is still in the sand. Some quicksand has been encountered. The pit sunk on the vein west of the Pewabic lode brought out no startling developments. There was some copper in it, but it did not look promising enough to warrant any further expenditure of money. Supt. Dunn has driven in east from the shaft on the Pewabic lode and at 18 feet found another lode which is carrying a fair amount of copper. The miners are now in this belt about 10 feet."

QUINCY MINING COMPANY.—The mine produced 450 tons of mineral during October, against 450 tons during September, and the same number of tons during October last year. For 10 months the production amounts to 4,697 tons, against 2,963 tons in 1889, an increase of 1,134 tons.

GOLD.

ROPES GOLD MINING COMPANY.—At this mine preparations are being made to drive for the new vein from the eleventh level. The skip road will be extended to this point, and the work pushed as rapidly as possible. The management is, of course, anxious to know just how extensive the vein is. Some express the idea that it will be found many levels above where it was struck, having been passed in the workings owing to the extent of the fissure.

MISSOURI.

The following abstract is made from the statement of operations of the State geological survey for the month of September, issued by Arthur N. Winslow, State geologist: There are, in and about Kansas City, some 92 works engaged in the manufacture of clay products, and from 15 to 20 quarries. The country about this city, including Henry and other counties, has valuable deposits of clays and other structural materials, which are supplied to Kansas City and other points.

In the examination of the mineral waters about 30 localities have been visited, and some 20 samples for analysis have been collected from the following 16 counties: Monroe, Audrain, Callaway, Boone, Howard, Randolph, Livingston, Worth, Gentry, Nodaway, Buchanan, Platte, Clinton, Clay, Adair and Jackson. As this work progresses the importance of the subject is constantly developing. A very large amount of capital has been invested in improvements at numerous of these springs in the State, and many of them have a large patronage. There is evidence that the waters at many places are of decided therapeutic value, though a determination of their compositions is necessary to fully substantiate this.

The work in the coal fields in Laclede, St. Clair, Randolph and Callaway counties has already progressed far enough for it to be apparent that the coal lands at present under development represent only a small portion of the whole, and that many farms and other lands contain beds which should prove valuable possessions to their owners. These lands offer promising field for investment, and that this fact is appreciated by those who have knowledge of the ground is evidenced by the extent to which such lands in some sections are passing into the control of investors and companies.

HICKORY COUNTY.

A mineral discovery has just been made at Pomme de Terre, on James Smith's land. It is a bluff 50 feet high, facing on the Pomme de Terre river and more than 100 yards in width. The face of the bluff shows itself to be full of birds-eye zinc, and it is claimed by experts that the rock carrying it is the silicate of zinc. Mr. Smith states that some Ohio gentlemen are negotiating with him for a half interest in the mine, and an option has been taken on an 80-acre tract one-half mile below this at $30,000.

POMME DE TERRE MINING COMPANY now controls the Fitzpatrick group of mines. It has a capital stock of $100,000. In a 71-foot shaft a drift is being run west from the bottom on a vein of lead that gives fair promise of soon opening up a good lead. The company's Stevens property is about three-quarters of a mile from this shaft. In the ravine on this tract it struck a fine quantity of lead, but owing to the low ground the shaft was abandoned and one sunk higher up the hill, the object being to strike the lead where it will be free from water. The company has purchased and leased about 80 acres and it seems to mean business.

JOPLIN COUNTY.

(From our Special Correspondent.)

JOPLIN, Nov. 2.

Saturday evening closed a prosperous week in the lead and zinc mines, with a steady increase in the price of zinc ore the market closing at $27@$28 per ton. Lead ore fell off and closed at $30 per thousand. Following are given the sales made by the different districts:

Joplin mines, 1,414,040 pounds zinc ore and 195,930 lead; value, $23,553.

Webb City mines, 831,710 pounds zinc ore and 56,650 lead; value, $12,470.

Carterville mines, 847,570 pounds zinc ore ond 119,110 lead; value, $14,494.

Zincite mines, 80,370 pounds zinc ore, value, $1,085.

Oronogo mines, 4,336 pounds zinc ore, and lead, 8,490; value, $797.

Galena, Kans., mines, 1,125,000 pounds zinc ore and 100,720 lead: value, $16,282.

All districts, total value, $68,681.

Last Tuesday morning Jay Gould and other officials of the Missouri Pacific Railroad visited our city. They were met at the depot by a committee composed of Judge Picher, O. B. Steen, Col. Gregg and H. S. Newman. Mr. Gould expressed himself as very much surprised at the improvements since his visit here in the summer. He also assured the committee that he would build a branch of the Missouri Pacific direct from the great coal fields of Minden to Joplin, a distance of only about 25 miles on the air line. The importance of this promise is evident, as the frequently mentioned scheme of erecting a large zinc smelting plant in Joplin has only failed to materialize because satisfactory coal rates could not be made for any length of time. With this improvement and our weekly production of more than 2,000 tons af zinc ore, we expect to be able to supply Europe with spelter direct from the Joplin smelter, whereas recently Messrs. Vivian & Sons, of Wales, England, purchased 1,000 tons of zinc ore from the Center Creek Company, at Webb City, to ship to their smelter.

EMPIRE ZINC COMPANY.—This company is now completing arrangements to operate some of its mines by electric motor power. The Southwestern Electric Light and Power Company will run a circuit to the company's plant.

The town of Empire is a typical mining camp, whose population in less than one year has grown from 50 to about 1,200, all of whom are engaged in the mines. The mining industry has substituted fine plants of machinery for the primitive windlass and horse hoister. Two branch railroad lines now run into the camp. Facts such as these prove the magnitude of the lead and zinc mines of this district.

LITTLE JOSIE.—This company on the Windsor Company's land, east of the city, is working on a large face of lead and zinc ore, and last week turned in 44,000 pounds zinc ore and 10,000 lead.

OSWEGO LAND.—This property made rather a small turnin last week, owing to repairs at the main plant of machinery.

MONTANA.

BEAVERHEAD COUNTY.

LONE PINE MINING COMPANY.—The stockholders of this company, says an exchange, met in Helena recently and ratified the agreement made by the trustees six weeks since to sell its property in the Vipond district, Beaverhead county, to an English syndicate composed of the principal stockholders of the Jay Hawk Company operating in the same district. The sale is made on a basis of $500,000, a portion of which is reserved in stock, only a controlling interest being actually transferred. The property sold consists of six full claims, namely, the Lone Pine, Silver Star, Silver King, Harrison, H. Greeley, Excelsior and Black Pine, together with the ten-stamp mill, put in last year, and other improvements.

DEER LODGE COUNTY.

A mining deal involving the purchase of properties at the head of Clear Creek has been consummated. The total consideration is said to have been $165,000, and of this amount $20,000 has already been paid, leaving $85,000 to be paid July 1st, and $60,000 September 1st. The property is transferred to Gen. John A. Leggat and Mr. C. H. Palmer, of the Butte & Boston Mining Company, they being prominent among the purchasers. The sellers were Messrs. William Wilson, G. H. Bradley and the Sullivan brothers. Until recently the property had not been worked, but now it is asserted that it will be systematically developed. Five claims comprise the group, the Sullivan & Wilson, Deer Lodge, Spring, Highland Chief and White Pine, besides a valuable water right.

NEW SILVER CROWN MINING COMPANY.—The Silver Crown Mining Company operating in Oro Fino district, has been reorganized and is now called the New Silver Crown Mining Company, with a capital stock of $500,000, shares $1 each. The trustees of the company are R. L. Hornbrook, Thomas Stuart, S. D. Stuart, Edward Simpson, and Colonel Inglehart. The company was reorganized for the purpose of making the stock assessable in order that the work of exploration could be carried on without the entire expense falling on the stockolders. After officers are elected and the stock issued an assessment, it is said, will be levied. In the meantime the work of putting up the hoist and getting other things in shape about the mines will continue, after which sinking will be commenced at the ninety-foot level and continued until a depth of 300 feet is reached. Crosscuts will be driven at intervals of 100 feet. At the bottom of the present workings there is said to be twenty-four feet of ledge matter, eight feet of which is solid ore.

BIMETALLIC EXTENSION MINING COMPANY.—Active operations have been begun on this company's property. Mr. James Patten, of Philipsburg, who is one of the stockholders, has been appointed manager. He will be seconded by Mr. A. V. Comstock as foreman in charge of the work of development. Mr. Comstock was until recently superintendent of the Silver King Mining Company of Arizona. A force of men, says the Butte *Miner*, has been put at work clearing and grading a road from a point on the Philipsburg-Granite road to the place selected for the erection of the buildings, which will be put up by the company. The main working shaft, which, like that of the Elizabeth, will be carried to a depth of 500 feet before crosscutting, has been started with windlass, and machinery for hoisting and pumping has been ordered. The shaft is so situated that crosscuts can be driven from it directly through both the Shoo Fly and Susie H. claims, both of which adjoin the property of the Bimetallic Mining Company directly on the west.

GRANITE MOUNTAIN MINING COMPANY.—From an advance statement of yearly operations we learn that the total gross expenditures of every kind, except dividends, from the date when operations were commenced October 8th, 1880, have been $5,542,488.94, and the total gross receipts have been $14,828,456.65 during the same period, including dividend No. 70, which was paid October 10th last, the stockholders have received $9,800,000 in dividends, being 98 per cent. of the capital stock. The receipts exceeded those of last year $540,300.09 and the disbursements for the year exceeded those of last year by $632,450.88, while the balance in bank on July 31st, 1890, was $128,638.48 less than a year ago. On that same date, however, the company had 304 bars of bullion en route and unsold of the estimated market value of $489,222 or $212,893 more than the estimated market value of bullion en route and unsold at the same time the year previous. Concerning the future of the property, the president says there is every reason to expect the permanency of the ore bodies already developed, and that many of the most promising claims are yet to be developed. From Superintendent Weir's report it is learned that a total of 6,666·5 feet of prospect and development work was done in the different levels, drifts, crosscuts, shafts and raises, the total depth of the Ruby shaft on July 31 being 1,180·3 feet, having been sunk 203·3 feet during the year. The following is a statement of the ore mined and hoisted to the surface:

	Tons.
Ore delivered to Mill A	10,253,866
Ore delivered to Mill B	18,533,786
Ore delivered to Mill C	34,741,400
Ore shipped to smelter	29,164
Ore stored up	6,881,807
Total	70,440,023

The average cost of work for the year, including expenses of hoisting plant, air compressor, electric light, blacksmithing, machine shop, office, etc., is as follows:

Mining ore, per ton	$5.84
For levels and drifts, including timbering, per linear foot	12.51
For cross-cuts (including timbering), per linear foot	14.08
For winzes and upraises (including timbering) per linear foot	23.80
For sinking Ruby shaft (including timbering) per linear foot	60.45

During the year applications for patents were made and obtained upon 31 different mining claims owned by the Granite Company.

JEFFERSON COUNTY.

MINERAL HILL MINING COMPANY.—This company is about to bring the Corncracker mine into the list of producers. Work is directed to an 18-inch chute of galena assaying 160 ounces of silver, 48 per cent. lead and $3 per ton in gold. The property is developed by an 80-foot shaft.

MEAGHER COUNTY.

BOURBON.—This property is located 12 miles west of White Sulphur Springs. The ore is a free-milling gold and silver ore. The Helena *Journal* says: "It is believed to be the intention of the proprietor, Mr. Holter, to put in a mill to work its ores the coming spring."

THOMPSON GULCH PLACERS.—Mr. W. T. Mendenhall, of Helena, it is said, has secured a bond on these placers, covering every claim and, in addition, four patented water rights. It is his purpose to organize a company in Boston to work the properties on an extensive scale and he will shortly go east for that purpose. The bond covers 300 acres of what is believed to be pay ground. These placers have been worked on a small scale, heretofore less than thirty acres of the ground having been washed.

MISSOULA COUNTY.

According to the Helena *Journal*, over 300 tons of ore are now shipped monthly from Thompson Falls. The principal shipments consist of antimony. The ore commands $65 per ton at the railroad, the entire product being taken by a Philadelphia firm. Several mines are being opened in the vicinity of Thompson Falls.

CURLEW.—Seventy-five men are employed at this mine. Machinery for the new concentrator is being delivered daily and will soon be placed. There have been shipped 270 tons of first-class ore, which has returned the total of $48,132. In its production an expense of $39,000 was incurred (including a large amount of dead work), leaving a balance of $9,132 to the mine's credit and 10,000 tons of concentrating ore on the dump. S. T. Hauser and A. M. Holter, of Helena, are among the owners of the property.

PANHANDLE.—A one-third interest in this mine has been bonded to Mr. George Freisheimer for $3,000. It is located 120 miles northwest of Missoula, on the head of Fisher Creek, and joins the Donnelly & Hart property on the west. It is a large contact vein between quartzite and slate, and shows a strong vein of lead ore. Present developments on the property consist of a tunnel 200 feet in length and an incline shaft 30 feet in depth.

SILVER BOW COUNTY.

BOSTON AND MONTANA CONSOLIDATED COPPER AND SILVER MINING COMPANY.—At the annual meeting, held at Boston on the 30th ult., the following trustees and an auditor were elected for the ensuing year: Auditor, Frederick Beck; trustees, Franklin Fairbanks, Albert S. Bigelow, Joseph W. Clark, Leonard Lewisohn, A. W. Spencer, H. Wallerstein and Thomas Couch. About 100,000 shares of stock were represented at the meeting. The October output of the company was 2,500,000 pounds of copper.

THE AMERICAN RUBY MINING COMPANY.—The directors of this company, whose property is located in Oro Fino district, have decided to make the stock assessable rather than incur any indebtedness in carrying on the work of development. In order to do this they must organize a new company and turn over to it all the property. In regard to the work done a double compartment shaft has been sunk 350 feet. The shaft struck the main lead on the hanging wall at a depth of 50 feet and went through it. The ledge was 12 feet wide. At 100 feet a crosscut was made south 28 feet, cutting the main vein again, which was found to be about the same width. At 200 feet the crosscut was 68 feet. The third level or crosscut is at a depth of 350 feet, and reaches the main vein at a distance of 97 feet south. In the meantime, in sinking the shaft, another vein was struck at the depth of 190 feet, dipping the same as the main vein, from the north to the south, which was 20 feet in width. At the 350-foot level this vein was crossed at a distance from the shaft of 15 feet. Orders to close down came just as the south or main vein was struck. The crosscut had only gone about six feet into the vein and had not reached the hanging wall where the pay ore lies. The water tank is handling 30,000 gallons of water daily.

NEVADA.

EUREKA COUNTY.

(From our Special Correspondent.)

SAN FRANCISCO, Oct. 30.

ADAMS HILL CONSOLIDATED MINING COMPANY.—Mr. P. Dewey, president of the Hamburg Company operating in this district, has submitted samples of the low grade ores from this mine to Major C. A. Kenney, a metallurgist of this city, for the purpose of ascertaining if the quartz and low grade ore in the locality can be lixiviated and the gold saved. If a favorable answer is made lixiviation works will be erected at Adams Hill next spring.

EUREKA CONSOLIDATED MINING COMPANY.—The suits instituted by the United States government against this company and the Richmond Mining Company to recover the enormous sum of $10,000,000 for timber alleged to have been cut illegally, have been dismissed.

STOREY COUNTY—COMSTOCK LODE.

ALPHA CONSOLIDATED MINING COMPANY.—The annual meeting of the Company was held on Tuesday, at which there were 90,775 shares of stock represented, mostly by proxy. The following board of officers was elected: C. Hirschfield, president; W. W. Erskine, vice-president; C. F. Smyth, A. Jackson and Thos. Anderson, trustees. C. E. Elliott was re-elected secretary, and A. C. Hamilton, superintendent. The Secretary's financial statement showed a cash balance on Oct. 1st, the end of the fiscal year, of $17,314.05. Since then this sum has been increased by payments of assessment No. 5. The annual report of the superintendent makes mention of a body of quartz encountered in a cross-cut, in the north lateral drift, 70 feet north from the shaft. Penetration has been made for a distance of 20 feet, the last 6 feet giving assays ranging from $6 to $20. From the south lateral drift, 70 feet south from shaft, a cross-cut was also run for 180 feet, the face of which is now in low grade quartz. Commenting on this Superintendent Hamilton says: "The explorations give unmistakable indications that this ore body is a continuation of the cut on the level above. Having attained on this level a known length of nearly 200 feet, with the strength of the vein, and an improvement in the character and value of the ore, future prospects are good."

CROWN POINT MINING COMPANY.—The Gold Hill Pumping Association has had the telescope pipe of one of the two Dow sinking pumps changed to permit of its speedy removal from position to position as progress is made on the incline. The other pipe will also be changed, after which pumping operations will begin in earnest. As depth is attained, air pipes are to be led down the incline for the purpose of keeping the field of operations comfortable.

NORTH CAROLINA.

UNION COUNTY.

(From our Special Correspondent.)

AMERICAN MINING AND MANUFACTURING COMPANY.—This is the name of the company operating the old Hemby mine. About six months ago Boston capitalists had the property investigated with a view to purchasing, the result being the organization of the above-mentioned company, with W. A. Dietrick, of Boston, president and general manager.

The property was equipped with a 10-stamp mill and a mining plant; upon assuming charge Mr. Dietrick erected a Wiswell mill and added a concentration plant, consisting of one Embry and two Gilpin county machines. There are two working shafts, the Houston and the Pump, of 160 and 135 feet in depth, respectively. The Houston is the working shaft, and is now being put down as rapidly as possible. It has three levels at 50, 100, and 150 feet, and another will be driven at 200 when that depth is reached.

The ore of the mine has been what is termed the "clay slates," really being a talco-argillaceous schist, more or less chloritic and quartzitic. The recent developments have, however, brought to light a large body of galenite, with some chalcopyrite disseminated through it, having a quartzose gangue. This is nothing new for that property, as it has been discovered before in very small quantities, though nothing of this importance was anticipated. It is now an interesting question that must be settled whether or not this is to be the ore upon which the mine will have to depend, as the two ores require very different treatment. At present the indications are that the new ore will predominate. It was discovered about two months ago while crosscutting on the vein from the 100-foot level, about 120 feet from the shaft and four feet from the level. An examination revealed the fact that the capping of a vein, about two feet thick at that place, had been struck, which dipped toward the Houston vein. Upon sinking a winze it was found that the new vein intersected and absorbed the Houston about 20 feet lower. At the point of intersection of the two veins, the Houston was 20 inches thick and the new one had widened out to 3 feet. The winze is being put down on the combined vein, and so far as has been gone indicates that the new vein of galenite has completely absorbed the old vein—or, what amounts to the same thing, that it has taken the place of it. The 150 foot level is now being driven to intersect the winze when it reaches the proper depth. At present most of the ore is left standing, and only that which must be removed is taken out; the treatment of that taken out is only experimental and amounts to some 20 or 30 tons. It is cobbed and concentrated according to its richness in mineral, and will be shipped to the North Carolina Smelting Works at Thomasville for a test run. Assays of the "clay slates" run from $5 to $30. Though the mine is operated by a company, it is purely a private enterprise. The manager assures the writer that the property will be thoroughly tested. The manager has courteously offered the ENGINEERING AND MINING JOURNAL correspondent access to the mine at all times, and anything of interest will be noted.

PENNSYLVANIA.

COAL.

It is said that a syndicate has purchased the Dora coal mines from Youngblood & Ehram for $20,000, and that it will improve and develop them.

The Schuylkill Coal Exchange has issued a report dated Pottsville, October 31st, which shows that the collieries drawn to return prices of coal sold in October, 1890, to determine the rate of wages to be paid, make returns as follows: (P. & R. C. and I. Co.), Eagle Hill Colliery, $2.28·4; Alaska Colliery, $2.29·6; Elmwood Colliery, $2.29; Hammond Colliery, $2.30·7; Locust Spring Colliery, $2.31·2; total, $11.48·9; average, $2.29·8. The rate of wages to be paid for work done during the last two weeks of October and the first two weeks of November, 1890, is seven (7) per cent. below 2·50 basis.

NATURAL GAS.

PHILADELPHIA COMPANY.—This company has bought 3,000 acres of land in the Amity field. This is adjoining the region from which Carnegie, Phipps & Co. draw supplies, and has a gas pressure ranging from 525 to 700 pounds. The company has begun development and piping, and will have, it is said, gas from this field in from 30 to 60 days.

OIL.

Exports of refined, crude, and naphtha from the following ports, from January 1st to October 31st, were as follows:

	1890. Gals.	1889. Gals.
From Boston	2,261,706	4,160,089
Philadelphia	142,792,559	134,090,479
Baltimore	11,651,503	6,158,832
Perth Amboy	13,159,060	11,415,946
New York	382,100,104	378,081,899
Total	551,964,932	536,907,245

SOUTH DAKOTA.

LAWRENCE COUNTY.

(From our Special Correspondent.)

DEADWOOD, Oct. 28.

NIGGER HILL TIN DISTRICT.

This district is situated at the northern portion of the Black Hills. To-day it is the last of our placer camps, and during a recent visit it did an old timer's heart good to see the miners weigh out gold dust in exchange for merchandise. These placer diggings have been worked, whenever the supply of water was sufficient, every year since the earliest settlement of the Hills. Many nuggets of remarkable size have been taken out from time to time, and as late as last September one weighing 49 dwts. 6 grs. was found in Bear Gulch at the foot of Nigger Hill. At all times the placer miners have been bothered with stream tin in large quantities, but being unacquainted with that metal contented themselves with cleaning it from the gold dust, until after the reports of the tin discoveries in the Southern Hills, when they brought some of this stream tin to Deadwood to assayers, who pronounced it pure cassiterite. This was sufficient incentive to the old prospectors to commence prospecting for tin-bearing rock in the section. In a short time it was definitely ascertained that a tin belt about five miles square existed on the Nigger and surrounding hills. Locations were made and prospecting commenced in earnest, the most of the capital being furnished during the early stages by local men, the majority of whom afterward sold out to Eastern capitalists. On investigation the investers ascertained the amount of capital necessary to be invested to produce metallic tin, and decided to develop the prospects more thoroughly before erecting any plants for milling. Work is now progressing slowly but surely to this end, and to-day, while the amount of work performed is not sufficiently extensive to warrant the assertion that tin mines of great extent or richness exist in this locality, yet it is sufficient to bear out the assertion that good prospects for such have been discovered. The tin-bearing rock is of the same character as found in the Southern Hills, carrying mica, black tourmaline, and in some cases columbite. The outcroppings throughout the district are very rich in tin crystals, from the size of a pin's head to several pounds in weight. The most extensive workings are on the Cleveland mine where a shaft 150 feet has been sunk, and a cross-cut drift run at the bottom, but at present water is greatly troubling the miners. Several shallower shafts, as well as open cuts and prospect tunnels, were visited by us. In all, the tin-bearing rock showed up as good prospects. When further development work has been performed these may prove to be valuable deposits. Several tons of the cassiterite and stream tin were taken to England a few years since, and pronounced by experts to be as pure as that found on the Malay Peninsula. Professor Zahn, geologist for the Burlington & Missouri Railroad Company, made a very strong report on this tin district, the result of a visit and examination some months since.

DEADWOOD, Nov. 4.

CALEDONIA GOLD MINING COMPANY.—Mr. T. L. Skinner, the superintendent of this company, has written the following letter to the president and board of directors: "Our recent wet weather and snows have settled the caved and broken matter in the open cuts on the surface of the mine, it lies on the roofs, arches and pillars that protect our underground workings in such masses as to seriously threaten a caving in of these, and makes it very dangerous for the miners to work under. All the best ore lies directly under these arches, pillars and roofs. Even should they not cave in or give way, I shall have to remove the men from under them till the danger lessens, and it will be impossible to resume work upon the profitable ore for some time. I may be able to avert the danger in a few months, or it may become necessary to blow out the roofs in some portion of the mine and relieve the rest by letting the caved and surface matter fill in some of the workings. In either event it may become necessary to abandon working the ore now developed for some time; indeed, I cannot foretell what will be the exact result of the mine caving or letting the caved matter fill in the stopes. I shall endeavor to keep the mill going on such other ore as I have in sight, but it is very low grade, and will not, I fear, pay expenses. I shall at any rate have to shut the mill down very soon—for about a week—to repair the engines. I think it advisable for you to stop dividends for the present, until this condition of the mine is overcome. It is impossible to determine for what amount of money the treasury may be called upon, as our contracts for winter supplies are all made and supplies are now coming in."

[The underground work in the Caledonia has not left sufficient support for the roof. The stopes are a magnificent sight, and mining has been cheap; but safety has been sacrificed, we fear, to economy.—ED. E. & M. J.]

MARK TWAIN.—This lode is the property of E. May, of Lead City. The east end line joins the west end line of the Perseverance. There are two prospect tunnels on the property, one 200 the other 150 feet in length, which expose ore bodies of an average thickness of 2½ feet. The ore is now being taken out preparatory to shipment to Omaha for treatment.

PORTLAND CONSOLIDATED MINING COMPANY.—This company was one of the first in the Black Hills to undertake to treat dry ores—improperly called refractory. We say improperly, because it has now been clearly demonstrated that these ores can be treated by smelting, whereas refractory ores proper are such as have to be treated with chemicals and cannot be smelted. The term refractory was first applied to Black Hills dry ores by Professor Jenney when, on investigation, he found that the gold could not be saved by amalgamation. The Portland Company during the early eighties tried several processes, and, although its ore assayed very rich, yet it could not obtain satisfactory results. In consequence, for the past few years, the property has lain idle. The gross results were satisfactory, but the freight charges at that time were so high that the company concluded to await the arrival of railroads. These are almost there, and work will soon be resumed on the property under the supervision of D. W. Ford. Last week we visited the water property in this section of the dry ore belt, and although I've found the evidences of much prospect work of individual owners, most of the development work around the camp was on the company's property. The location of most of its mines is on Green Mountain, not far north from Terry's Peak, and within about four miles of the northwestern boundary, so far as has been at present discovered, of the dry ore belt.

The work on the Empire claim, belonging to the Trojan group, a portion of the company's property, was found to consist of a shaft where ore was struck at a depth of 20 feet; a shaft about 50 feet further to the southwest showing ore at a depth of 45 feet; a third, 50 feet further back and higher up the hill, in which ore was again struck at a depth of 72 feet. At a point about 100 feet northeasterly from the discovery shaft on the side hill, we found a gang of men working on an open cut face for a working tunnel. Work had progressed to a distance of about 60 feet, at which point a good grade of ore was exposed, showing a thickness of 8½ feet at the face, and continuing in both directions at the sides of the tunnel. The formation in this entire district is a flat one, and so far as work shows the ore body is continuous throughout the hill.

In the Perseverance, another claim belonging to the same group and company, we found a tunnel 300 feet in length cut through the ore body the entire distance, and still carrying ore in its face. The thickness could only be estimated as the floor was on ore. The lines of this claim are located parallel with those of the Empire, but this tunnel has been run in such a direction as to be at right angles with the line of the one now being run on the Empire, and apparently crosscuts the same body of ore

The Portland lode is the claim on which the most work has been done. We visited one tunnel 235 feet in length, run through the ore body, in the face of which ore was also exposed. There are four tunnels in the old abandoned workings, the stopes of which honeycomb the hill for a distance of about 125 feet on each tunnel. As the location is 1,500 feet in length, there is yet much virgin ground to be prospected.

The Trojan lode proper is located to the northeast of the Empire, the end line joining the side line of the latter. From this dump 170 tons of ore were shipped when freight cost $30 a ton, which yielded an average of $47 a ton in gold.

The hill called Green Mountain, on which all these claims are located, has an elevation of 6,200 feet. The workings on the Trojan which is the highest location on the hill consist of a tunnel 321 feet in length, the entire distance being in an ore body with ore still exposed at the face. The direction of the tunnel is such that it crosscuts the ore body and helps to prove the theory that this blanket formation with but a very slight dip underlies the entire top formation of the hill, while it actually exposes an immense body of undetermined thickness.

UTAH.

SALT LAKE COUNTY.

GREELEY MINING COMPANY.—This company has filed articles of incorporation by C. J. Thomson, W. A. Thomson, Edwin Rushton, C. H. Wilbur, James Thomson, A. E. Spayde, M. J. Weeks, E. J. Rushton, C. B. Weeks, R. Westwood. The capital stock is $2,500,000, shares $5 each. The mining property is in Little Cottonwood mining district, one mile from Alta.

SALT LAKE FREESTONE COMPANY.—This company of Salt Lake City has filed articles of incorporation. The incorporators are John Sharp, Jr., Bolivar Roberts, W. A. Nelden, James Sharp and Elias Morris, and the capital stock is $500,000, shares $10 each. The company owns quarries in township 1 north, range 1 west, west ½ southwest ¼ section 12.

SUMMIT COUNTY.

MEEARS SILVER MINING COMPANY.—This company was recently incorporated with a capital stock of $10,000,000, divided into 40,000 shares. The first annual meeting will be held on the third Wednesday in January, 1891. The following constitute the present board of officers: Directors: Jos. R. Walker, Geo. A. Meears, R. C. Chambers, John J. Daly, M. H. Walker, Phillip Morgan and S. F. Walker. The officers of the company are Jos. R. Walker, president; R. C. Chambers, vice-president; M. H. Walker, treasurer, and S. F. Walker, secretary. The property owned by the company consists of the Lady Morgan, Lizarina, Teller, St. Louis, Cora, Adelade, Emaly, Grizzley, Cashier, Danville, Benton, Abbey No. 2, Monno and the Maryatta lode mining claims and an undivided half interest in the Abbey mining claim, together with all hoisting works, machinery and developments belonging thereto, all situated in Uintah mining district. More particularly described, the property is the old Morgan group of mines, which underwent such a long siege of litigation as to ownership title, resulting in a victory for the present owners and incorporators. The group is situated in the ground between the Daly and the Anchor group.

TOOELE COUNTY.

MILLER & BENNETT MINING AND MILLING COMPANY.—Articles of incorporation of this company have been filed. The capital stock is $400,000, divided into 400,000 shares. G. J. Field, N. G. Ferguson, G. H. Bennett, A. B. Miller and H. Donovan are the trustees. George H. Bennett is president; Otto Hudson, vice-president, and A. B. Miller, secretary and treasurer. The property owned is the Last Chance, Mingo and Ontario mining locations, in an unorganized mining district.

WEST VIRGINIA.

MONONGALIA COUNTY.

COAL.

BUCKWOOD-CLEMENTS.—These coal mines have been sold by M. L. & C. E. Hutchings to France & Co., of Chicago. Possession will be given at once. The plant includes two mines and 200 coke ovens, and the necessary apparatus and dwellings.

WISCONSIN.

ASHLAND COUNTY.

(From our Special Correspondent.)

HURLEY, Oct. 28.

BOUREN—MOORE—TRUMBLE.—East of Section 32 mine lie three neglected properties. At the time of the "boom," they were all working, but soon after the collapse of the stock-bubble they were shut down. Work was resumed this summer on each, and is meeting with encouraging prospects.

JUPITER IRON MINING CO.—This company has the option on the land lying north of the Moore. The ore body has been located, and followed for nearly 200 feet. In width, the lense varies from 10 to 20 feet. A new working shaft is being sunk near the exploring shaft, in which the ore body was discovered. This property will ship next season, and the owners are especially deserving of success, for the reason that they have never given up even when all work near them was abandoned.

MONTREAL RIVER MINING COMPANY.—This property, one of the first shipping mines developed on the Range, has nearly exhausted the ore lying above the dike on the east end of its territory, and is working with final success on the extreme west, near the Hennepin mine. At a depth of 400 feet, a cross-cut has shown the vein to be 50 feet

in width. This lens of ore is the extension of the Hennepin lens, which dips down, as it runs east. It is expected that one or more of the shafts further east will be sunk to greater depth in order to strike and develop this new ore body. The Montreal promises to take a leading position among the Wisconsin mines next season.

SECTION 33 MINING COMPANY.—The mine of this company has shipped steadily and heavily to lower lake ports and to local furnaces, to the extent of over 100,000 tons of iron ore this season. Two veins, the north and the south, are being worked, mainly on the west end of the property, near the Montreal mine. Explorations are being extended toward the east, and will be pushed this winter. This property has recently been thoroughly equipped with new machinery, and is in a very flourishing and prosperous condition.

WYOMING.

ALBANY COUNTY.

(From an Occasional Correspondent.)

Messrs. W. B. Hugus & Co. write us under date Saratoga, Wyoming, 14th October, as follows: Large bodies of quartz have been found near by which show wonderful returns. The writer has seen and dug from prospect holes a great many pieces of quartz bearing free gold. Also the ledges found so far seem to be permanent. Out of 12 ounces of unselected rock taken from one ledge more than 39 cents worth of gold was obtained. Every ledge struck (and about twenty have so far been found) shows wonderful prospects. Old and reliable miners and prospectors from Montana, Colorado, Utah, and even Old Mexico, say it is by all odds the richest and best they ever saw. The discovery was made by Mr. B. P. Arendall, from Montana. The ledges are situated on the top of a high divide, and all creeks on either side of this mountain have been prospected for placer digging and in every case show gold. It was searched for for years without success until these mines were discovered. About sixty men are now at the camp, some of whom will remain all winter getting out ore. We send you a small specimen of ore to show the quality. The only way to these mines is through Saratoga. A good wagon road has just been finished.

FOREIGN MINING NEWS.

BRITISH COLUMBIA.

(From our Special Correspondent.)

NELSON, Oct. 16.

Mr. Mara, the manager of the Columbia and Kootanie Navigation Company, was in Nelson recently. He stated that his company intends to put a commodious line of steamboats on the Kootanie lake and river. The first boat will closely resemble the "Lytton" now running between the Little Dalles and Revelstoke, and will be built this winter. One of the lumber mills here has contracted to supply the timber required.

The water in the Columbia has risen a few feet and the trip to the Little Dalles has been resumed. This will fortunately enable Washington investors to reach the new camp at Trail creek this fall.

A diploma for the best mineral exhibit at the Toronto exhibition has been awarded to the West Kootanie division. The ores from the Nelson district, however, must have contributed but little to this result, for some of our mine owners are positively averse to advertising our mineral wealth.

NELSON DISTRICT.

FORTY-NINE CREEK.—The hydraulic company has moved its giant higher up the creek, the boulders in the lower part of the ground being too large to handle with the limited quantity of water at its command. A clean-up has not yet been made: D. B. Huntley, formely the mill superintendent at the Poorman mill, is confident of a satisfactory outcome.

GOAT RIVER.—Work will be carried on all the winter on several of the claims, now 13 in number, in this new camp. In the face of the tunnel on the Alice claim there is 2 feet of argentiferous galena ore, which will average over 40 ounces in silver and 70 per cent. lead. The remainder of the ledge, 18 inches wide, will average 20 per cent. lead and 11 ounces in silver.

POORMAN.—A "crown-grant" for this claim has just been applied for. The scarcity of water in Eagle creek still compels the mill to remain idle. The management is undecided as to the amount of work to be done this winter, but it will probably be confined to running the lower tunnel to tap the l dge at a depth of 300-320 feet. Some of the owners also favor the idea of running a ditch for water from the Sandy creek, about three miles distant. This would give enough water to run the mill continuously.

SILVER KING.—Daily shipments of about four tons of high-grade copper-silver ore are still being made. It is stated that the ore is worth about $300 per ton.

WHITEWATER.—This claim, on Rover creek, is looking well. The vein varies from two to six feet in width. Recent assays from a considerable quantity of the ore average $204 in gold, 21·5 ounces in silver.

HOT SPRINGS DISTRICT.

PACIFIC BULLION MINING COMPANY. This company's stock—listed on the Spokane Falls Mining Exchange—is lifeless at 13 to 16 cents, par value $100. Some of the claims are worthy of attention, but no effort is being made to develop them, despite statements to the contrary with which we were formerly surrounded.

UNION.—An application has been made for a "crown-grant" of this property. The claim is likely to prove of considerable value.

ILLECILLIWAET DISTRICT.

FISH CREEK.—The new shaft on this claim is now down 14 feet and shows an 18-inch body of nice looking ore.

MONARCH.—The Revelstoke smelter was recently in operation on three carloads of ore from the mine at Field. About 200 tons in all are expected at the smelter. We believe this is the first run yet made at these works.

LARDEAU DISTRICT.

Five claims have been staked in this district by J. W. Haskins, recently a candidate for parliamentary honors. The claims are situated on Campbell mountain, over the divide eastward from Trout lake. Ore from some of the claims is said to essay well, e. g.—silver 60 ounces, lead 79 per cent., gold $200 and upwards. Dr. Campbell, the manager of the Revelstoke Mining Company, owns a half interest in four of the claims.

A quartz ledge, assaying very fairly in gold and silver, and upon which four claims have been staked, has been discovered on Galena Bay, near the Lardeau river. The locators will work on the claim through the winter.

CANADA.

PROVINCE OF NOVA SCOTIA.

(From our Special Correspondent.)

HALIFAX, Nov. 4.

BRAS D'OR MARBLE COMPANY.—This company is making a large outlay for channeling and other quarry machinery. It expects to begin shipping marble in the spring. Its lime works have been enlarged during the past season, but have not been able to meet the demand.

NEW GLASGOW IRON AND COAL COMPANY.—This company has purchased a site at the forks of the East River, Pictou county, for its blast furnace, and is now clearing the ground.

COAL.

The Governor General has spent several weeks visiting various parts of the Province. At Pictou, Londonderry and Cape Breton, he entered several of the mines and formally opened the new railway across the Island of Cape Breton.

The output at Springhill last month was 52,000 tons. The feeders struck in the pillar workings are diminishing, and the work of sinking the new lifts is being pushed day and night.

The first passenger train from Oxford to Pugwash was run over the line a few days ago, and next spring shipments can be made to Montreal by water.

GOLD.

It is reported that a property at Waverley, owned by a company of which Mr. T. R. Gue is the president, has been sold in New York. The Lake View company has completed its first crush of about 1,000 tons; results are not yet known.

Messrs. Kidston and Brown, of Boston, have visited the Ovens district, Lunenberg county, with a view of testing the auriferous sands of that locality, with a view of using the material in their Gold King concentrator.

At Isaacs harbor Mr. McNaughton has a ten-stamp mill nearly ready for operations. It has been engaged on the Judge Henry property.

CUBA.

SIGNA IRON COMPANY.—This company, having an office in Philadelphia, Pa., has recently purchased 40,000 acres of mineral lands on the south side of Cuba. These lands are part of a mountain chain containing large lenses of iron ore which lines the entire coast from Cape Maysi to Santiago de Cuba, where the mines of the Juragua Iron Company are located. The latter company is said to be controlled by the Bethlehem and Pennsylvania steel companies, which use its product at the Bethlehem, Steelton and Sparrow Point furnaces.

SPANISH-AMERICAN MINING COMPANY.—In our issue of September 6th we announced that W. E. Dickinson had resigned the superintendency of the Colby iron mine, Gogebic County, Mich., for the purpose of taking charge of certain Cuban iron properties. It has since been learned that the company, named as above, owning the properties is controlled by the Colby syndicate—Henry Villard, Joseph L. Colby et als. The deposits are said to be extensive Bessemer hema.ite ores, running about 65 per cent. iron.

GERMANY.

The working of mines for cupriferous slate commenced more than a year ago by a firm in Naumburg, in the district of Udersleben, proves to be successful. In a huge regularly constructed engine house a steam engine has been erected with the pressure of six atmospheres for the drawing up of the copper-bearing and for the elevation of the water of a second shaft. Near this house there is a funnel pipe 46 meters high. The pits have a depth of about 25—30 meters, and lead to a drift of 125—150 feet in length. Up to date 46 people have been employed. The thickness of the copper-bearing stratum in which there are to be found, besides a pretty high percentage of ore, the well known impressions of the Palæoniscus in beautiful specimens—amounts to 12—14 inches. Furnaces will be constructed later on.

MEXICO.

SONORA.

A special inspector of the Mexican government, it is said, has telegraphed to interested parties at Tucson, Arizona, that a body of anthracite has been struck at San Marcial. The coal used by the railroads of this vicinity is hauled 500 miles.

(From our Special Correspondent.)

SAN FRANCISCO, Oct. 30.

MEXICAN COAL COMPANY.—Some years ago J. M. Ainsa, after examining the formations at the Alsua & Graff mines and the ground west of San Marcial, came to the conclusion that about 70 square miles of ground was one vast coal deposit broken by volcanic action. American experts had examined the fields and pronounced them worthless. Meantime Mr. Ainsa has kept his faith in his theory. Now the news reaches us that the diamond drill being operated on this tract struck a vein of anthracite coal at a depth of 80 ft. The auger had penetrated six feet when drilling had to be stopped. It is claimed that the true carboniferous coal measures carrying the same shell, animal and plant fossils, have been struck. On the surface at La Pein as the coal measures are thrown up and spread like a map upon the ground, there appearing thirty-seven coal seams, varying from one foot to fourteen feet in thickness. When the drill finally demonstrates that these veins are to be found underlying the San Marcial Valley the discovery will mean much not only to the State of Sonora, but to California, now largely dependent for the coal supply on British Columbia.

NORWAY.

The late low price of silver has been considerably affecting the Kongsberg mines, the production of which has decreased. Diamond boring has been introduced in prospecting for silver at the Government mines, but the merits of the system have not yet been reported upon. Some new shafts have been sunk in the neighborhood in search of silver ore. In the Ofoten Fjord small lodes of lead-glance and zinc blend have been discovered. At the Aamdal copper works in Thelemarken preparations have been made for smelting with coke, and for refining the copper by the electrolytic process. The Vigsnaes copper mine, in the neighborhood of Haugesund, is now the deepest in Norway, having been driven to a depth of 2,150 feet. The extraction of nickel by the Bessemer process, as applied to it by Mr. Manhée, the French metallurgist, promises to render the Norwegian nickel mines more remunerative than they are at present. The cobalt works at Modum have been affected injuriously by the discovery of the mineral in other countries. The apatite mines at Odegaard are doing well.

PERU.

Our South American mail brings the information that on October 30th the title deeds of the Mercedes mines, at Cundoriaco, were signed, whereby the properties are transferred in return for $1,000,000 to a corporation which has been formed in England.

(From an occasional Correspondent.)

PUCARA.—Very extensive improvements are now being carried on at the mineral works of this property, by J. Manuel Montero, of Lima. These famous old mines are being reopened, and the plans and work now under construction involve the building of concentrating and reduction works, and fitting the mine with every modern appliance. It is extremely gratifying to see a work of this kind undertaken by native capitalists, who not only understand the value of the mines, but the serious drawbacks met with in mining and milling in one of the highest portions of the Cordillera. Machinery of all kinds has to be packed on mules hundreds of miles, while the native Indians form the only available labor supply. Like the Mexicans, their wants are so few that they can subsist for a month on the earnings of a few days' labor, and as a consequence, anything like continuous service is not to be expected from them. In addition to the surface improvements at the mines, it is proposed to open them at great depth by means of a tunnel, the machinery for which has just been shipped from the Ingersoll-Sergeant Rock Drill Company, of New York. The plant consists of water pipe, Pelton wheels, duplicate air compressors, air pipe, No. 3 rock drills, etc., together with duplicates of everything liable to be broken or worn; the whole sectionized and packed for mule transport.

The plant was designed and ordered for Mr. Montero by Messrs. Taylor & Brunton, of Colorado, whose experience with mining machinery and knowledge of the conditions under which operations are carried on in South America should enable them to foresee and meet every contingency. The

compressor plant will be the highest in the world as the power house which is now being built to receive the machinery has an altitude of 16,100 ft. The three principal points at the mines are already connected by a telephone line 15 miles in length. This line at two points crosses the main Cordillera at an altitude of 17,000 feet, the mean height for the entire 15 miles being over 16,000 feet. The line works remarkably well, being entirely free from any electrical or other disturbances. The mines are to be connected by an electric railway, 10 kilometres in length, 50 centimetres gauge, power to be generated by the Pelton wheels mentioned preceding. The new concentrating and reduction works will have an altitude or almost exactly 15,000 feet. At these extreme elevations considerably less work is performed by men than would be expected of them at a lower altitude; but as a rule they enjoy fairly good health, it being a noticeable fact that human beings endure the climate and elevation much better than horses and mules. All of the improvements at the mines are under the direct charge of Mr. Arthur L. Pearse, an English mining engineer, who has had several years experience in the United States.

RUSSIA.

Consular reports give the following figures for the petroleum products of Batoum, in 1,000 gallons:

	1888.	1889.
Crude and residuum	4.824	4,150
Lubricating oil	9,073	10,635
Illuminating distillate	19,994	23.406
Refined oil	127,079	165,725
Total	160,970	203,916

MEETINGS.

Cactus Mining Company, at the office of Marshall & Royle, Salt Lake City, Utah, November 15th, at twelve o'clock.

Niagara Mining and Smelting Company, at the Walker House, Salt Lake City, Utah, November 12th, at twelve o'clock.

DIVIDENDS.

Aspen Mining and Smelting Company, dividend No. 18, of ten cents per share ($20,000), payable November 15th, at the office of the company, No. 54 Wall street, New York City. Transfer-books close November 10th and reopen November 17th.

Osceola Mining Company, dividend No. 29. of $1.50 per share ($75,000), payable December 21st, at the office of the company, Boston, Mass. Transfer-books close November 17th and reopen December 3d.

The Maryland Coal Company on the 5th inst. declared a dividend of 1½ per cent., payable December 15th next. Transfer-books close December 2d and reopen December 16th.

ASSESSMENTS.

Company.	No.	When levied.	D'l'nq't in office.	Day of Sale.	Amn't per share.
Alliance, Utah	9	Oct. 15	Nov. 15	Dec. 8	.10
Alpha, Nev	5	Sept. 16	Oct. 22	Nov. 11	.25
Baker Divide, Cal.	18	Oct. 7	Nov. 11	Dec. 4	.20
Big Camas, Idaho	5	Oct. 15	Nov. 17	Dec. 17	.05
Challenge, Nev	7	Sept. 26	Oct. 28	Nov. 17	.50
Con. Imperial, Nev.	29	Oct. 13	Nov. 15	Dec. 8	.05
Goleta, Cal.	1	Sept. 16	Oct. 27	Nov. 24	.10
Gould & Curry, Nev	65	Sept. 16	Oct. 21	Nov. 13	.30
Hale & Norcross	96	Oct. 7	Nov. 12	Dec. 3	.50
Live Oak D. Gravel, Cal.	12	Sept. 3	Oct. 9	Nov. 10	.05
Lockport, S. Dak.	6	Sept. 10	Oct. 10	Nov. 10	.002
Martin White	24	Oct. 17	Nov. 24	Dec. 16	.25
Mexican, Nev.	41	Oct. 18	Nov. 20	Dec. 10	.25
Mono, Cal.	30	Sept. 18	Oct. 28	Dec. 2	.25
North Peer, Ariz.	6	Oct. 1	Nov. 5	Nov. 25	.05
Russell, Cal	7	Oct. 13	Nov. 17	Dec. 8	.05
Seg. Belcher	7	Oct. 7	Nov. 10	Dec. 1	.25
Silver Hill	27	Oct. 8	Nov. 13	Dec. 3	.20
Silver King, Ariz.	4	Sept. 20	Oct. 28	Nov. 18	.30
Sterling, Cal.	1	Sept. 16	Oct. 27	Nov. 24	.06

MINING STOCKS.

For complete quotations of shares listed in New York, Boston, San Francisco, Baltimore, Denver, Kansas City, Minneapolis, St. Louis, Pittsburg, Birmingham, Ala.; London and Paris, see pages 563 and 564.

NEW YORK, Friday Evening, Nov. 7.

The week under review was a holiday week. Railroad stocks went wrong, and the mining market—but, really, there was no market. Mining stocks apparently have lost their charm for those persons who were wont to deal in them. No features whatsoever, chronic dullness, unrelieved by even temporary activity,—such was the condition of affairs during the past week. We note no instance in which any stock on the list presents as good an appearance as it did last week.

Of the Colorado shares 2,500 shares of Leadville Consolidated were sold at 17 per share. Little Chief was quiet and stationary at 33c. Silver Cord appeared in some demand at 40c., and 5,100 shares were sold at this price. Small Hopes shows one sale of 200 shares at 90c.

We note sales of Quicksilver, preferred, aggregating 410 shares at $40 to $42, and 500 shares of mmon at $7 to $7.50.

Of Astoria 5,700 shares were sold, and the prices advanced from 5c. to 7c.

Brunswick at 7c. to 8c. was traded in to the extent of 3,200 shares.

Sutter Creek declined from $1.25 to $1.15.

Plymouth was not dealt in. News of interest to the stockholders will be found in our mining news column.

Of the Comstocks, Alta declined from $1.75 to $1.50. Best & Belcher shows one sale of 100 shares at $3.25, and Bullion another at the same price. Chollar opened at $3.80 and declined to $3.40. Comstock Tunnel at 16c. and the scrip at 28c., were each traded in to the extent of 200 shares. Consolidated Imperial has one sale at 45c., and Exchequer another at $1.70, which is slightly higher than last week. Julia was dealt in to the extent of 1,800 shares at 30 to 40 cents. Mexican has one sale at $3.05. Occidental another at $1.80. Potosi is slightly higher than last week at $6.75@$7. Scorpion was stationary at 40c. Union Consolidated declined from $3 to $2.75. Utah was stationary at $1.15. Gould & Curry was quiet at $2.35@$2.40. Crown Point opened at $2.75 and advanced 10c. Ophir was slightly lower than last week and was quiet at $4.40@$4.75. Sierra Nevada declined from $3.20 to $2.95.

Trading in Alice has been comparatively heavy during the week, and 1,200 shares at $2.10@$2.25 have been sold.

Of the Black Hills stocks, Caledonia declined from $1.05 to 75c., with 2,500 shares sold. News of considerable interest in connection with this property will be found in our mining news column. Homestake has a solitary transaction at $9.13.

Phœnix, of Arizona, was quiet at 75@79c. El Cristo was in little demand at 78c.

Of the Utah stocks Horn Silver was steady at $3.35@$3.45. Ontario was traded in to the extent of 165 shares at $40@$40.13.

Holyoke shows a single sale of 500 shares at 2c.

Of the copper stocks Atlantic has one sale at $16.75 and Calumet & Hecla another at $275.13. Franklin was neglected at $15.50. Kearsarge shows one sale at $11.63. Of Osceola, 100 shares at $35.63 were sold. This company has declared a dividend of $1.50 per share.

Mutual Smelting and Mining Company was dealt in to the extent of 1,400 shares at $1.45@$1.50.

Silver King shows one sale at 50c.

The Bank of England suddenly to-day advanced its rate of discount to 6 per cent. and brought on a general slump in our stock market here, because London sold American securities very heavily. The reason for the advance in the bank rate was given by private cables, which reported that the bank had lost £1,000,000 in gold yesterday which was shipped to South America, and the drop in sterling exchange and the high rates for money here made the directors fear that we would draw on them for gold, too. To prevent this the action was taken, and it was said that it was imperative on them to act at once. The bank is said to have been a borrower of other institutions recently in order to enlarge its gold reserve, and to have been called on to make heavy shipments to Scotland. To these reports was added fresh talk of one of the largest houses in London being financially embarrassed.

Though our New York market was in a good condition the load was too much and it broke, Reading and other London securities suffering most.

Boston. Nov. 6.

(From our Special Correspondent.)

The decline in copper stocks continues, in face of the fact that lake ingot copper is held firmly at about 17c. per pound and the probability that there will be no material decline in the metal for a long time to come. To be sure, the demand at present is rather limited, owing to the general disposition on the part of consumers to reduce their stock at the close of the year, and some outside sales are made at a slight concession, but the most conservative men in the trade do not look to see copper sell at 16c. during 1891, while the conditions are much more favorable for an advance than they were a year ago.

A great many copper stocks have been bought on margin for speculation and weak holders have been obliged to sell; naturally enough buyers have held back in order to get stocks cheap, and the stringency of money and the decline in the general stock market has favored them in that respect. The directors of the Osceola Mining Company have declared a dividend of $1½ per share, and will have a surplus of over $25,000, and that after charging off about $40,000 for new construction.

The stock sold this week at $33¾, but on the announcement of the above dividend advanced to $35¼. With the prospect of $6 per share per annum, the stock is well worth the market price.

Calumet & Hecla sold at $274, a decline of $6 for the week. The output for October was 4,151 tons, an increase over same month in 1889 of 530 tons.

Tamarack has further declined the past week, touching $150. The decline is attributed to the unfavorable report of last year's operations.

Quincy sold down to $80, a decline of $15 for the week. The October output was 450 tons, being no increase over last year. The stock has now reached a point at which it ought to be a purchase for investment.

Boston and Montana seems to have reached bottom figures for the present and has been quite steady at about $47.

Franklin sold down to $16 as the lowest point, and is fairly steady at slightly above that figure. The product of 306 tons compares with 265 tons in September.

Centennial & Kearsage have both been weak, the former selling down to $13 and the latter to $10½.

Atlantic declined to $16, but recovered to $17.

Allouez is in better demand and sold at $4½, and that price is bid for it.

Butte steady at $16, and National at $1½@$1⅝.

Santa Fe declined to 45c., and Ridge sold at 75c.

Silver stocks dull. Dunkin sold at 75c., as before, and Breece at 40c.

By Telegraph.—Calumet & Hecla, $270; Tamarack, $142½; Boston & Montana, $44¾; Osceola, $33⅝; Quincy, $75 bid; Kearsarge, $11; Centennial, $12½; Arnold, $1.05; Atlantic, $105; Allouez, $4½; Huron, $5 asked; Santa Fe, 40c.; Butte & Boston, $15½.

Denver.

Prices and sales for the week ending Nov. 1st.

Company.	Opening.	H.	L.	Closing.	S.
Alleghany, Colo.	14¼	*15b	14	13¾	200
Amity, Colo.	02½b	03¾	02¾	03½	4,000
Bangkok, C. B., Colo.	08	*08½	07¾	07¾	11,400
Bates-Hunter, Colo	45b	48	46	45½	3,900
Brownlow, Colo.	07½b	*08	07½	07½	400
Calliope, Colo.	31b	32b	30b	32	.....
Cash, Colo.	14b	14	14	12	100
Clay County, Colo.	88b	†97	89	88	3,100
Hard Money, Colo.	02b	03¾	03	02½	200
Leavenworth	65b	65	63	64	1,000
Little Rule, Colo.	87b	88	88	88	4,700
Matchless, Colo.	100b	60	60	....	.....
May-Mazeppa, Colo.	105b	105	105	105	2,300
Mollie Gibson, Colo.	50a	75	50*	....	.....
Oro, Colo.	.....	70	50	51	.....
Pay Rock, Colo.	04¾b	05¼	05	05	1,100
Puzzler, Colo	07¼b	08¼b	07¾	08	1,600
Reed-National, Colo.	69b	69b	67b	69	.....
Running Lode	25b	*26	23	22½	7,000
Silver Cord, Colo.	35	*38b	35	33	1,000
Whale, Colo	16b	17b	15b	16	.....
Prospects:					
Argonaut, Colo.	28a	25b	20b*	24	.....
Aspen United, Colo.	06¼	06¼	05	04¾	7,200
Big Indian, Colo.	09¼	09¼	09	08	200
Big Six, Colo.	08	*09¼	07	06	8,300
Century, Colo.	29½	33	29½	32	3,600
Claudia J., Colo.	06b	06¾	06¼	06½	2,000
Nat. G. & O.l Co.	14b	*21	18	17½	900
Diamond B., Colo.	02¾b	*03	02½	02½	7,700
Emmons, Colo.	32b	*36	32	33	10,700
Golden Treasure, Colo.	22b	*24	21	21	21,100
Ironclad, Colo.	06b	08	07½	07	1,500
John Jay, Colo	13½b	14	14	13	1,000
Justice	10½b	15	11	14	6,200
Legal Tender, Colo.	02¼b	*04	02½	03	14,000
Morning Glim, Colo.	45b	47	46	46	1,000
Park Consolidated	24¼	*27	25	26	2,600
Potosi, Colo.	07b	07¼b	07b	07	.....
Rialto, Colo.	50b	58b	50b	58	.....
Total for the week					130,000

*Buyer 30 days. †Buyer 60 days. ‡Seller 60 days. §Seller 30 days. a Asked. b Bid.

Kansas City. Nov. 3.

Company.	Opening.	H.	L.	Closing.	Sales.
Argonaut	24½	24½	24½	24†	1,600
Bates-Hunter	44	44	43½	42½†	7,500
Big Six	7	8*	7	7½†	3,900
Cash Gold	11	11	11	11	4,100
Clay County	94*	94*	93	93†	300
Diamond B	3†	2½	2½	2½†	100
Hard Money	2¾	3	3	3†	3,300
Hunki Dori	6†	....	....	6†	.....
Iron Clad	9½‖	9½‖	7	7¼†	2,800
Kansas City M. & M. Co.	2.70*	2.70*	2.67½	2.67½†	450
Kansas City, Col	16½	16½	16½	16½†	100
Leavenworth	62½	67*	62½	64†	10,400
Little Nugget	98	98	95½	1.01†	700
Little Rule	91*	91*	91*	88†	100
May Mazeppa	1.03	1.06*	1.03	1.03†	300
Minnequa Zinc M. Co.	2½	3*	1¾	2†	13,500
Monte Cristo	3½†	....	....	3¼†	.....
Morning Glim	43	45*	43	45†	1,200
Pay Rock	5†	....	....	5½†	.....
Pelican	18‖	....	....	....	.....
Potosi	10‖	10‖	7½	7¼†	8,000
Running Lode	25	25*	25*	23½†	600
Sylph	16†	19	19	10†	100
Total					61,050
Pit sales					2,500

†Bid. ‡ Asked. * Buyer 30. § Seller 30. ‖* Seller 60. ‖Buyer 60.

Lake Superior Iron and Gold Stocks

(Report by David M. Ford, Ishpeming, Mich.)

IRON MINING STOCKS.

Name of company.	Par value.	Bid.	Asked.
Ashland Iron Co.	$25.00	$55.00	$60.00
Aurora Iron Co.	25 00	7.50	8.50
Champion Iron Co.	25 00	100.00	105.00
Chandler Iron Co.	25.00	41.00	42.00
Chicago & Minn. Ore Co.	100.00	115.00	118.00
Cleveland Iron Co.	25.00	17.00	17.50
Germania	25.00	11.50	12.00
Jackson Iron Co.	25.00	110.00	125.00
Lake Superior Iron Co.	25.00	68.00	78.00
Milwaukee Iron Co.	25.00	5.50	6.50
Minnesota Iron Co.	100.00	86.00	87.00
Montreal Iron Co.	25.00	9.00	10.00
Norrie (Metropolitan)	25.00	75.00	78.00
Odanah Iron Co	25.00	20.00	22.00
Pittsburg Lake Angeline Co.	25.00	175.00	200.00
Republic Iron Co.	25.00	40.00	41.00

GOLD MINING STOCKS.

Name of Company.	Par value.	Lowest.	High.
Gold Lake Mg. Co.	.....	....	....
Grayling Gold & Silver Co.	$25.00	....	....
Michigan Gold Co.	25.00	....	.65
Peninsula Gold & Silver Co.	25.00	....	.50
Ropes Gold & Silver Co.	25.00	1.75	$2.00

Salt Lake City. Oct. 28.

Company.	Opening.	Highest.	Lowest.	Closing.	Sales.
Alice, Mont.	2.12½b	2.15 b	2.12½ b	*2.15 b	300
Alliance, Utah	2.50 b	2.75 b	2.50 b	2.75 b	100
Anchor, Utah.	6.50 b	6.90 a	6.80 b	6.80 b	....
Apex, Utah	.12 b	.16 b	.12 b	.14½ b	17,100
Barnes, Utah	.04 b	.05 b	.04 b	.04½ b	5,000
Cent.-Eureka, Ut.	35.00 b	35.00 b	35.00 b	35.00 b	....
Congo	.14 b	.16 b	.14 b	.14½ b	12,500
Crescent, Utah	.25 b	.26¼ b	.25 b	.26½ b	6,000
Daly, Utah	22.25 b	23.00 a	22.25 b	22.50 b	....
Glencoe, Utah	1.00 b	1.45 a	1.00 b	1.10 b	....
Horn Silver, Utah	3.25 b	3.30 b	3.25 b	3.30 b	....
Malad Con., Id.	.02 b	.02¼ b	.02 b	.02¼ b	7,000
Mammoth, Utah.	3.65 b	4.00 a	3.65 b	3.70 b	....
Northern Spy	4.00 a	4 00 a	3.00 a	3.00 a	....
Ontario, Utah	....	....	....	....	....
Stanley	.18 b	.18 b	.18 b	.18 b	1,000
Utah L. & C. Co.	8.25 b	8.45 b	8.25 b	8.45 b	100
Utah Oil Co., Utah	.06 b	.10 b	.06 b	.07 b	4,500
Woodside, Utah	2.50 b	2.50 b	2.50 b	2.50 b	....
Total					53,600

a Asked. b Bid. * Seller 10 days.

PIPE LINE CERTIFICATES.

(Specially reported by Messrs. WATSON & GIBSON.)

The market on National Transit certificates was firm early in the week, but it has lost toward the end and we see nothing to prevent lower prices. The Ohio oil at 18 cents is proportionately so much cheaper than Pennsylvania oil, about 78, that we can see nothing to prevent a break to 70, at least, and possibly to 60. We recommend the sale of it, as we have for three months recommended the sale of railroad stocks. The financial situation is not clear, and we expect to see considerable trouble abroad.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Nov. 1	78½	78½	78	78	8,000
3	78¼	78¾	78¼	78¾	15,000
4*	....	....	....	....	.....
5	79	81	79	80	11,000
6	77⅞	78	77⅝	78	37,000
7	78¾	78¾	78	78	16,000
Total sales in barrels					80,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Nov. 1	78½	79½	78½	78¾	36,000
3	79¾	79¾	79⅜	79¼	36,000
4*	....	....	....	....	.....
5	79½	79½	78¼	78½	73,000
6	78	79⅛	78	78¾	33,000
7	78⅞	78⅞	76⅞	77	90,000
Total sales in barrels					268,000

* Election Day.

BUCKEYE PIPE LINE CERTIFICATES.

NEW YORK STOCK EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Nov. 1	....	....	....	....	.....
3	....	....	....	....	.....
4*	....	....	....	....	.....
5	18½	19⅞	18½	19⅞	16,000
6	....	....	....	....	.....
7	....	....	....	....	.....
Total sales in barrels					16,000

CONSOLIDATED STOCK AND PETROLEUM EXCHANGE.

	Opening.	Highest.	Lowest.	Closing.	Sales.
Nov. 1	....	....	....	....	.....
3	17½	18½	17½	18½	2,000
4*	....	....	....	....	.....
5	17½	17½	17½	17½	1,000
6	18¼	18⅛	18⅛	18⅛	1,000
7	18½	20	18	18	4,000
Total sales in barrels					8,000

* Election Day.

COAL TRADE REVIEW.

NEW YORK, Friday Evening, November 7.

Statistics.

STATEMENT of shipments of anthracite coal (approximated) for the week ending November 1st, 1890, compared with same period last year:

Regions.	Nov. 1, 1890.	Nov. 2, 1889.	Difference.
Wyoming Region. Tons	435,064	459,101	Dec. 24,037
Lehigh Region "	147,399	146,980	Inc. 419
Schuylkill Region "	267,841	236,444	Inc. 31,397
Total Tons	850,301	842,525	Inc. 7,779
Total for year to date Tons	29,235,255	29,582,851	Dec. 347,596

PRODUCTION OF COKE on line of Pennsylvania R. R. for the week ending November 1st, and year from January 1st, in tons of 2,000 lbs.: Week, 108,226 tons; year, 4,454,879 tons: to corresponding date in 1889, 2,669,678.

PRODUCTION OF BITUMINOUS COAL for week ending November 1st and year from January 1st:

EASTERN AND NORTHERN SHIPMENTS.

	1890. Week.	1890. Year.	1889. Year.
Phila. & Erie R.R.	3,569	112,560	70,204
Cumberland, Md.	*83,675	3,218,823	2,551,451
Barclay, Pa	*3,590	128,987	100,264
Broad Top, Pa.	12,438	421,221	285,289
Clearfield, Pa.	61,297	3,110,022	3:0 159
Allegheny, Pa.	26,867	1,064,468	676,246
Beach Creek, Pa.	58,978	1,594,154	1,302,128
Pocahontas Flat Top	33,990	1,569,771	1,434,751
Kanawha, W. Va.	*45,783	1,743,130	1,529,397
Total	329,987	12,963,136	8,302,889

* Estimated.

WESTERN SHIPMENTS.

Pittsburg, Pa	18,856	689,650	550,834
Westmoreland, Pa.	22,732	950,374	1,262,673
Monongahela, Pa.	10,926	441,621	328,890
Total	52,514	2,081.645	2,142,397
Grand Total	382,501	15,044,781	10,445,286

Anthracite.

With the first week of November upon us and the weather as mild and balmy as it usually is toward the end of April, it is scarcely to be expected that there would be much snap to the market. In truth, the anthracite trade is very dull and November prices seem as far off as they were in July. Of course, this state of things is not entirely due to the condition of the weather, though it would not exist but for that cause, or, if it did, it would be in a much smaller degree. The over-production during the past summer is now producing the inevitable reaction. Those—and they are in the majority—who have persistently mined more coal than the agreed tonnage during the spring and summer, and sold it at considerably lower than fall prices, now find the surplus coal piled up in the coal yards. The retailers will realize the full winter prices when the consumer is driven into the market by cold weather, and the operators will lose the difference between the high and low scale on just so much coal as was overproduced. Buyers are slow—very slow—just now, firm in the faith that it will be some time before they are called upon to pay higher prices than those at present demanded.

The great scarcity of cars and vessels is no doubt a factor in the firmness of the market, for firm it certainly is, though dull. Jobbers do not seem to be at all anxious to meet buyers, and they claim that they have all they want to do under existing conditions.

Stove and egg have been more active during the week than the other sizes, chestnut and broken lagging perceptibly, with pea and buckwheat rather scarce than plentiful and stiff. The November prices are neither asked nor offered yet, most of the business done being at September rates. The former are: Stove, $4.40; egg, $4.10; broken, $3.75; chestnut, $3.95; buckwheat, Lehigh, $1.60; free-burning, $1.75@$1.85 on board; pea, $2.25; free burning, $2.50@$2.75 on board.

Bituminous.

The condition of the soft coal trade remains unchanged in many respects. Jobbers and shippers all claim that they could handle and dispose of a great deal more coal if they could get it. But in most cases shipping facilities are so restricted that the stocks of coal at the mines continue to increase, and more than one large jobber is admittedly oversold Vessels are very scarce at all the lower ports. A considerable fleet, delayed by stress of weather, is daily expected to reach this port, and is very anxiously awaited.

The present production at all the mines is satisfactory to the jobbers. Most of the labor agitations have simmered down for the present, and there is no present expectation of further stoppage until the first of the year, when the new scale of miners' wages will have to be passed upon. At Frick's Standard Mine, Connellsville, on Tuesday, 4,000 miners went out on strike, because of the discharge of a Hungarian "spotter." They remained out some hours, but returned to work on the understanding that the matter would be left to arbitration.

Prices are firm, as we quote, with a general expectation of a rise before the year closes: At Baltimore, $2.40 f. o. b.; at Philadelphia, $2.50; at New York, $3.15; alongside, $3.40.

Buffalo. Nov. 6.

(From our Special Correspondent.)

Anthracite.—The Buffalo schedule for anthracite coal from the first of November is as follows: $5.05 for grate and $5.30 for egg, stove and chestnut per gross ton f.o.b. vessels, Buffalo; $4.75 for grate and $5 for egg, stove and chestnut per gross ton to dealers on cars at Buffalo and bridges for shipment west, and $5 for grate and $5.25 for egg, stove and chestnut per net ton delivered screened to citizens. Anthracite coal is moderately active, with light supply for shipment by lake.

Bituminous.—The scarcity through lack of transportation facilities from the mines manifests itself in firm prices with a good demand.

Coke quiet and steady. News comes this morning of a strike in the Connellsville region.

The following is frow the Chicago *Times* and is quite interesting if true: "It is learned that several eastern shipping agents are in correspondence with Chicago and Milwaukee vessel-owners, the object in view being the purchase of a number of Lake steamers to be used in the Atlantic coasting trade this winter. There is said to be a good demand at present for tonnage in the coal trade between Jersey City and Boston, and other ports and, if the vessels are purchased they will probably engage in that trade. The boats will be taken through the St. Lawrence River to the coast. Vessels like the "Topeka," "George H. Dyer," etc., medium sized Lake steamers, are the kind wanted. These would draw between nine and ten feet of water, and are capable of being lightered up to eight feet, which would make it easy to transfer them through the St. Lawrence." It seems that from an immense Lake tonnage a few vessels could be spared without disadvantage to the transportation interests.

Severe gales were followed to-day and yesterday by fine weather. The near approach of the close of navigation has caused a boom in coal freights, and an advance of from 10 to 25c. has taken place, with brisk demand for vessels on the spot and to arrive, and for Michigan ports especially. The shipments by lake from this port from October 30th to November 5th, both days inclusive, were 55,545 net tons, distributed about as follows: 29,250 to Chicago, 9,650 to Milwaukee, 5,670 to Toledo, 6,200 to Duluth, 3,100 to Superior, 300 to Washburn, 1,200 to Racine, 50 to Port Stanly, 100 to Bay City and 25 to Port Burwell; total thus far this season, 1,802,335 net tons. The rates of freight were 60@75c. to Chicago, 50@75c. to Milwaukee, 70@85c. to Racine, 25c. to Bay City, 30@40c. to Detroit, Toledo, Duluth, Superior and Washburn. Canal freights reported were: Buffalo to Syracuse, two loads coal at 70c. net ton, free on and off; and six loads coal to Brooklyn, N. Y. at 1·25c. net ton, free on and off.

Statistical.—Railroad receipts and shipments of coal at this port are not reported by request. Receipts of coal thus far this season none. Shipments by lake westward for month of October: 355,010 net tons, as compared with 317,250 tons in 1889 and 411,600 tons in 1888; for season to November 1st: 1,790,870 net tons, as compared with 1,901,300 tons in 1889 and 2,244,800 tons in 1888. The receipts of coal by canal for the month of October: 10,048 net tons, as compared with 11,986 tons in 1889 and 17,687 tons in 1888; the shipments, 7,449 net tons, as compared with 1,126 tons in 1889 and 3,917 tons in 1888. Total receipts by canal thus far this season to November 1st: 31,452 net tons, as compared with 80,484 tons in 1889 and 123,963 tons in 1888; the shipments, 16,074 net tons, as compared with 9,993 tons in 1889 and 10,029 tons in 1888. The aggregate shipments by lake thus far this season show a decrease of 110,520 net tons as compared with 1889, and 453,930 net tons as compared with 1888. The rates of freight hence to points named during October were: 60c. to Chicago; 50c. to Milwaukee; 30c. to Duluth and Lake Superior ports, and 30c. to Toledo and Detroit. The rate to Chicago on November 1st, 1889, was 60c., and in 1888 and 1887 $1 per net ton.

Shipments of coal by lake from Buffalo thus far this season were distributed about as follows:

Buffalo to—	Net tons.	Buffalo to—	Net tons.
Chicago	740,890	Marquette	16,300
Milwaukee	327,790	Cheboygan	1,030
Toledo	95,580	Marine City	1,220
Racine	31,600	Pt. Arthur	2,670
Green Bay	16,890	Sault Ste. Marie	7,120
Saginaw	11,440	Sheboygan	2,890
Kenosha	5,750	Windsor	2,650
Manitowoc	579	Huron, O.	290
Menominee	600	Sarnia	450
Serpent River	55	Amherstburg	750
Ludington	1,150	St. Ignace	400
Pt. Dover	250	Michigan City	1,150
Perry Sound	230	Alpena	900
Kincardine	1,100	Oscoda	580
Detroit	29,140	Ontonagon	100
Ashland	11,250	Owen Sound	500
Washburn	8,000	Charlevoix	100
Duluth	101,540	Ft William	6,350
Superior	172,150	Pt. Rowan	30
Gladstone	26,810	Gore Bay	305
Hancock	2,800	Wallaceburg	200
St. Clair	1,600	Sandusky	1,150
Escanabe	3,060	Au Sable	250
Houghton	3,110	Pt. Colborne	600
Pt. Burwell	10	Vessels from Tonawanda not reported at Custom House	131,179
Lake Linden	550		
Pt. Huron	3,290		
Muskoka	20		
Bay City	5,030		

Boston. Nov. 6.

(From our Special Correspondent.)

The position of anthracite coal is practically the same as last reported. The market tone continues firm, and the recently advanced prices are being lived up to. New business of a minor nature has appeared, and was generally handled at ruling prices. Shipments are coming forward in a fair way. Dealers are unable to move much of it into the interior points, owing to the poor transportation facilities, and consequently there is somewhat of an accumulation at the waterfront here. F. o. b. prices at New York are: broken, $4; egg, $4.25; stove, $4.40; chestnut, $3.95.

Bituminous coal does not arrive any faster. Under the present conditions dealers do not wish to take any new business, very little of which, however, is offering. The spot stock is naturally very small and dealers do not care to decrease it. The demand for gas coal continues good. Some of the consumers at interior points fear being pushed for a supply and readily take any small offerings. The price on cars holds steady at $3.65@3.75.

Freights are firm and are liable to continue so for some little time. Vessels of all kinds are scarce, more especially those of desirable sizes. The tendency is upward and a further advance is likely to occur when the winter sets in. From New York 65@70c. is commanded; from Philadelphia 85@95c.; and from Baltimore $1.10. But few charters are being made.

The retail demand continues good. The weather which is comparatively mild at present has caused many to look for a winter similar to the last, and this class is not buying. Prices are firm and easily maintained.

The receipts of anthracite coal for the week ending Nov. 1, were 49,102 tons, against 23,002 tons for the corresponding period in 1889; since Jan. 1, 1890, 1,474,285 tons. Receipts of bituminous for the

week were 25,721 tons against 31,722 tons for the corresponding period in 1889; since Jan. 1, 826,925 tons.

Chicago. Nov. 5.

(From our Special Correspondent.)

The Western Anthracite Coal Association, a combination of miners and shippers, which controls prices at docks in this city and all Lake ports, at a recent meeting advanced the figures for anthracite ten cents per ton, which seems to be well received by the trade. Why this advance should be made is not clear; conflicting reasons are given for it, the prevailing, and, perhaps, the best one is, the dealers want to make more money. The market is not active, though generally firm. The old complaint continues of inability to get coal enough to fill orders on account of scarcity of cars; local stocks are rapidly disappearing. The shortage is now estimated at 150,000 tons.

Wholesale prices are, f.o.b. Chicago: Large egg, $5.50; small egg, range and chestnut, $5.75; Lehigh lump, $7.

The retail prices fixed by the Chicago Coal Exchange are: Large egg, $6.75; small egg, range and chestnut, $7.

The bituminous market was never in better condition, apart from the same drawbacks with which the anthracite has to contend. The want of needed transportation is felt in every direction. The demand continues very large, but prices remain about as low as when it was much smaller than now. Quotations per ton of 2,000 pounds are: Erie, $4.25; Pittsburg, $3.30; Indiana block, $2.50; Blossburg, $4.00; Greene and Sullivan County (Ind.), shaft, $2.25@$2.40; Jackson Hill, $3.45; Jackson shaft, $3.35@$3.45; Hocking Valley, $3.30; Youghiogheny, $3.40. Wilmington, Mt. Olive and other Illinois coals at Chicago group points, $1.75 per ton.

Coke.—The coke market is also in good condition at this point; demand is good and prices are firm, with many justifiable complaints against railroads, of course. Prices are: Connellsville 72-hour, $5.20; domestic crushed, $4@$4.25; Elk Lick 72-hour, $4.25@$4.50, per ton of 2,000 pounds f.o.b. Chicago.

Pittsburg. Nov. 6.

(From our Chicago Correspondent.)

Coal.—The market is very firm, the demand keeping pace with the supply. Prices tend upwards, as many mills in this vicinity shut off from natural gas are making the necessary preparations to return to coal. The demand will undoubtedly increase and cause a further advance. The total shipments since our last amounted to 1,152,000 bushels.

	Per 100 bushels.		Per 100 bushels.
1st pool	$4.75	3d pool	$3.90
2d pool	4.50	4th pool	3.25

Railroad coal, $5.00@$5.50.

Connellsville Coke.—The still prevailing difficiency in cars and motive power is considerably embarrassing the coke region and retarding shipments to a serious extent; the individual cars seem to be the principle means of transportation. The demand at present is in excess of the supply. The number of inactive ovens remains about 1,600; a number of new ovens will soon be completed. Week's shipments, 6,050 cars, against 5,867 the previous week; deficiency 183 cars; Western shipments increased 220 cars; points west of Pittsburg, 4,270 cars; east of Pittsburg, 960; Pittsburg and river points, 820; shipments in tons, 108,950; list of active ovens, 13,950.

The rates were for 2,000 pounds f. o. b. cars at ovens: Blast furnace coke, $2.15; foundry coke, $2.45; crushed coke, $2.65.

Freights to Pittsburg 70c. per ton; Mahoning and Shenango Valleys, $1.35; St. Louis, $3.35; Cleveland, $1.70; Chicago, $2.75.

FREIGHTS.

From Philadelphia to: Alexandria, †.85; Baltimore, .75; Boston, .80@1.00; Charleston, .70; Galveston, 2.25; Marblehead, .95; Newburyport, .75; New York, †.90; Norfolk, .70; Richmond, .80; Rockport, 1.20; Savannah, 1.00; St. Johns, 1.00; Washington, †.85.

*And discharging. †Alongside.

METAL MARKET.

NEW YORK, Friday Evening, Nov. 6.

Prices of silver per ounce troy.

Nov.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.	Nov.	Sterling Exch'ge.	Lond'n Pence.	N. Y. Cts.
1	4.85	48⅛	1.05¾	5	4.85	48⅛	†
3	...	48⅛	1.06	6	....	48	‡
*4	....	....	.....	7	....	47	1.02

* Election day. † 1.06 to 1.05½. ‡ 1.04¼ to 1.03½.

Silver closes at the lowest point it has touched since early July, owing to a combination of circumstances, chiefly among which are the liquidation of disappointed holders, an active money market here and abroad, and a temporary suspension of purchases on foreign account. But with the Government such an immense factor in the absorption of our product, a reaction to higher prices is quite probable as soon as concurrent circumstances are favorable.

The United States assay office at New York reports total receipts of silver for the week to be 87,000 ounces.

Silver Bullion Certificates.

NEW YORK STOCK EXCHANGE.

	Price. H.	Price. L.	Sales.
Nov. 1	106⅛	106	140,000
Nov. 3	106¾	106¼	140,000
Nov. 4	...	...	*
Nov. 5	106⅜	105⅝	30,000
Nov. 6	105⅝	102	296,000
Nov. 7	102½	102	428.0 0
Total sales			944,000

*Election day.

Coinage at the Mints of the United States.

The following statement shows the coinage executed at the mints of the United States during October:

Denominations.	Pieces.	Value.
Double eagles	73,000	$1,460,000
Eagles	5,000	50,000
Half-eagles	25,000	125,000
Total gold	103,000	$1,635,000
Standard dollars	3,360.000	3,360,000
Dimes	2,650,000	265,000
Total silver	6,010,000	$3,625.000
Five cents	984,000	49,200
One cent	9,720,000	97,200
Total minor	10,704,000	$146,400
Total coinage	16,817,000	5,406,400

Foreign Bank Statement.

The governors of the Bank of England at their weekly meeting on Thursday made no change in its rate for discount, and it remains at 5 per cent. During the week the bank lost £215,000 bullion, and the proportion of its reserve to its liabilities was reduced from 35·33 to 34·90 per cent., against a decline from 40·74 to 39·77 per cent. in the same week last year, when its rate for discount was 5 per cent. On the 6th inst. the bank lost £90,000 bullion on the foreign balances. The weekly statement of the Bank of France shows a loss of 2,400,000 frs. gold and a loss of 1,975,000 frs. silver, against for the same week of last year a gain of 275,000 frs. gold and of 750,000 frs. silver.

Domestic and Foreign Coin.

The following are the latest market quotations for American and other coin:

	Bid.	Asked
Trade dollars	$ .80	$ .82
Mexican dollars	.80	.83
Peruvian soles and Chilian pesos	.73	.75
English silver	4.80	4.84
Five francs	.94	.95
Victoria sovereigns	4.84	4.93
Twenty francs	3.86	3.90
Twenty marks	4.74	4.78
Spanish doubloons	15.55	15.70
Spanish 25 pesetas	4.80	4.85
Mexican doubloons	15.55	15.70
Mexican 20 pesos	19.50	19.60
Ten guilders	3.96	4.00
Bar silver	1.02	1.03⅛

Copper.—The market continues very dull, and the transactions have almost all been of a retail character, but the little business that has been done was at full prices. As it is now nearly time for navigation by the lakes to cease, when the companies will have to pay half a cent more for all rail shipments, it seems very questionable whether or not they will give way in price. Up to now they have been firmly holding out for 17 cents, and seem to be confident they can keep the market there.

We have had some reports lately to the effect that heavy stocks have accumulated at the lakes, but we have not been able to verify them, and as far as we can judge, they are greatly exaggerated. Still it must be conceded that there is a rather flattish feeling in the market, and unless orders come in more freely, it is not unlikely that prices will have to be reduced. Lake copper we still quote at 17 cents, with ingot copper in New York obtainable at 16¾ cents.

As to Arizona and casting copper, we hear that the prices we quoted last week have been fully upheld, and that if not a large, certainly a fair business has been done. Considering that prices for these sorts must be called cheap with lake at 17c., it is not astonishing that consumers should operate somewhat more freely in them. We quote Arizona at 15¼c. and casting ot 14⅛@14⅜c.

Advices received by mail from Europe report a fair business. The decrease in statistics for the first half of October amounted to 1863 tons, while the second half shows an increase of about 200 tons, making the decrease for the month about 1,600 tons.

In spite of this, Chili Bars show a not unimportant decrease for the week in consequence of some heavy realizing by speculators. The market opened on Monday last at £58 5s.@£58 7s. 6d. and gradually lowered from day to day until £56 12s. 6d.@£56 15s. spot; with three months five shillings higher was touched today.

Tin.—The foreign market shows an important decline for the week, which, to a certain degree, is due to the decline in silver. The market opened at £96 10s.@£96 15s., with three months tin £1 lower, and advanced about 10s. in the middle of the week, but gave way to-day to £94 15s.@£95 spot, and £94 5s. @£94 10s. for three months, which is the lowest point reached for about six months past. It will be noticed that the large difference which has been existing between spot and three months tin for some time is gradually disappearing.

Considering this drop, our market, although also somewhat lower, is being well held up, which, however, is only natural in view of the fact that it has been for some time past below the parity of the foreign markets. A fair business has been done, and, as deliveries have been good, there is no pressure to sell in any quarter. We quote: Spot at 21¼; November at 21·15; December at 21·10, and January at 21·10.

Lead.—The arrivals which took place early this week depressed the market, as was to be expected, to the price at which futures have been selling all along, namely 5·25@5·30c., at which prices important transactions took place. There is no doubt that consumers are very badly stocked, and will of necessity have to enter the market again shortly, but are simply waiting to see if prices will give away any further, which, however, is not likely, as nothing cheaper can be imported. We quote Spanish lead at £14 5s., and English lead at £14 10s.

Chicago Lead Market.—Messrs. Everett & Post telegraph us as follows: "The market has been only fairly steady at 5c for future lead, and the demand is light; spot lead commands somewhat better figures, a few cars selling at 5.15c."

St. Louis Lead Market.—Messrs. John Wahl & Co. telegraph us as follows: "Lead is dull and buyers continue to buy from hand to mouth only; both spot and November are obtainable and slightly salable at 4·90c. The principal offerings come from speculators. Producers are of the opinion that lead has declined rather too rapidly of late and that a reaction is in order for the reason that very little lead is obtainable from first hands."

Spelter.—The scarcity of this metal continues, and there is a great demand for spot metal which does not exist. Makers are almost entirely sold out for the balance of the year, and we have to quote 6·10@6·15.

Antimony has been rather quiet, and we quote Cookson's at 21½@22 cts., L X, 18½@18¾ cts., and Hallett's, 18@18¼ cts.

Quicksilver.—This metal is very quiet. Last week's quotations hold good: London, £10, and New York, $56@$57.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Nov. 7.

American Pig Iron.—The pig iron market shows no change whatever. Business continues as last reported and nothing new can be said. Trading is still confined to small lots, and dealers cannot complain of insufficiency of orders. The consumption, which is enormous, is fully equal to the great production; in fact, we are told that just now the demand is even greater than the supply. We are not ready to admit this last assertion. A number of furnaces are out of blast, waiting only for an increase in demand. Our quotations are: Northern iron, No. 1 X, $17.50@$18; No. 2 X, $16.50@$17. Southern, No. 1 X, $16.50@$17.50, and No. 2 X, $15.50@$16.50.

Scotch Pig Iron.—Nothing is doing in this market. Cable advices from the other side received as we go to press say: "It is impossible to forecast the market, which is still depending on the duration of the strike." The strike continues unabated. Quotations must be regarded as merely nominal. No. 1 Coltness, $24.50; Dalmellington, $22; Eglinton, $21.25.

Spiegeleisen and Ferro-manganese.—We hear of absolutely no business in spiegel, which is quoted nominally, at $30@$31 for German, and $30.50@31.50 for English. In the ferro-manganese market similar state of affairs prevails. Some hand-to-mouth business is reported at $68.50@$69.50, with rumored sales at even lower prices.

Steel Rails.—This market is unchanged. Very little of importance is reported, and quotations are given at $29 at the mill. No sales of any magnitude have occurred, but we hear of several inquiries.

Rail Fastenings.—This market is in sympathy with the rail market. We quote: Spikes, 1·95@2c.; angle plates, 1·72@1·76c.; bolts and square nuts, 2·70c.; hexagonal nuts, 2·90@2·95c.; complete joint, iron and steel, according to weight.

Tubes and Pipe.—The association met in Philadelphia on the 5th inst. and reaffirmed prices. A majority of the mills reported business extending to January. Business is good and ruling discounts on car lots 47½ per cent. on butt, black; 40 on galvanized; 60 on lap, black, and 47¼ on lap, galvanized; 45 on 1¼-inch boilers; 50 for 2 inches and larger. Casing, all sizes, 50 per cent.

Structural Iron and Steel.—The week under review did not result in as much business in this market, chiefly due to the election, which interfered with builders. Quotations are unchanged, and we repeat them: Universal plates, 2·30c.; bridge plates, 2·30c.; angles, 2·10@2·20c.; tees, 2·65c.; beams, 3·10c.

Merchant Steel.—Business is in pretty good condition. Quotations have undergone no change

since our last. Best English tool steel, 15c. net; American tool steel, 7½@10c.; special grades, 13@20c.; crucible machinery steel, 5c.; crucible spring, 3¾c.; open-hearth machinery, 2·60c.; open-hearth spring, 2·60c.; tire steel, 2·60c.; toe calks, 2·60c.; flat file, 4¾c.; mill file, 5¼c.; taper file, 7¼c.; first quality sheet, 10c.; second quality sheet, 8c.

Old Rails.—We hear of a sale of 2,000 tons of old iron tee rails at $25.50 per ton to arrive. Spot lots are quoted at $26 and doubles at $26.50@$27. There are several inquires on the market.

Chicago. Nov. 5th

(From our Special Correspondent.)

The Chicago iron market maintains the satisfactory and promising conditions reported last week. All the departments of trade and manufacture into which iron and steel largely enter, are fully employed and consuming more crude and finished material than ever was known before.

Pig Iron.—Local trade is very active, and both production and consumption are extremely heavy. In August the excess of consumption over production was 44,000 tons, in September 46,000, and for October the difference will undoubtedly be found still greater. Stocks in yards are becoming small, and an early advance in prices seems inevitable; firmness characterizes quotations in all brands for most of which there is a good demand. During the past week Southern coke irons have shown a tendency toward higher prices; the demand seems to be chiefly for this class of iron and coke Lake ore mixtures; heavy sales of these are reported, also of Southern charcoals. Lake Superior charcoal continues quiet, but has manifested no pronounced symptoms of weakness. Softeners and silveries are in good car-lot demand for prompt delivery.

We quote to-day for cash per ton of 2,240 pounds, f. o. b. Chicago, for Nos. 1 and 2, Lake Superior charcoal No. 3, for car wheels, Nos. 4 and 5 for malleable, $20@$20.50; Lake Superior coke, Bessemer, $18.50; Lake Superior coke, Bay View No. 1, $17; No. 2, $16@$17; No. 3, $15.50@$16; Southern coke No. 1, $16.50@$17; No. 2, $16@$16.50; No. 3, $15.50@$16; Southern charcoal, $19@$19.50; standard Southern car wheel, $22@$24.50; Ohio softeners, Hanging Rock, $18@$18.50; Jackson County, $18.25@$18.75; Hanging Rock, cold blast, $26@$28; warm blast, $23@$25; No. 1 Scotch, according to brands, $26@$27; American Scotch, $19@$20; Bay View Scotch No. 1, $17; No. 2, $16; Chicago Scotch No. 1, $17; No. 2, $16; Emma Scotch, $19@$19.50; black band, Hubbard Scotch, $19; Haselton, $19; soft silvery, $18; Wellston No. 1, $18.75; No. 2, $18.25; Hamilton No. 1, $19.25@$19.75; Norton No. 1, $17.50@$18; Zanesville No. 1, $18.75@$19.25.

Structural Iron.—The anticipation that large quantities of structural material will soon be in demand by the World's Fair authorities impels contractors to secure low prices before the rush begins. The consequence is an increased demand, particularly from outside points—Omaha, St. Paul, St. Louis and Denver. Prices are very firm. For car lots, f.o.b. Chicago, iron and steel angles, $2.35@$2.40; Universal plates, $2.55; sheared plates, $2.50; tees, $2.75@$2.85; beams and channels, $3.20. Store prices are: Angles, $2.50@$2.60; tees, $2.90@$2.95, and beams and channels, $3.50@$3.70.

Bar Iron.—Some car iron orders for early delivery were placed on this market last week, but mills were too busy to give them attention. For future deliveries there is more anxiety manifested, and current prices would be shaded to secure this class of orders. Mills are quoting $1.85@$1.90 for half extras. Valley mills ask $1.75 f. o. b. mill for late deliveries; here $1.80 is the ruling price for car iron. Store trade is good and dealers ask $2.10@$2.20 for good reliable brands, according to quantity and quality, and $2 for common.

Black Sheet Iron.—Orders for car lots for stocking up are the rule and inquiries are numerous. Prices for No. 27 f. o. b. cars Chicago may be quoted at $3.15, although $3.25 for new orders is asked. Stores are doing a good trade at $3.20 for No. 24, $3.30 for Nos. 25 and 26, and $3.40 for No. 27.

Galvanized Sheet Iron.—Agents are not anxious for mill orders at present figures on account of the steady advance in spelter. Business is active, but not so brisk as it has been. Quotations are, for both cheap and standard brands, 60 per cent. discount on Juniata, and 60 and 5 per cent. on charcoal from store; jobbing lots are quoted according to quantity desired.

Merchant Steel.—Merchant steels are in fair demand; the fact that railroad shops are full of work creates a good demand for tool steel. We quote as follows: Tool steel, $7.75@$8; specials, $12@$25; open-hearth machinery, $3; Bessemer machinery, $2.50@$2.70; open-hearth spring steel, $2.75@$2.80; tire, $2.50@$2.60; toe calk, $2.70@$2.80; sleigh shoe, $2.40@$2.50; cutter shoe (T. & B.), $2.65@$2.70; crucible sheet steel, $7@$10; crucible spring, $3.75.

Plates, Tubes, etc.—The demand from stores is reported as good and mill orders as fair. Prices are firm and unchanged. Tank iron, $2.70; tank steel, $2.90; heavy sheets from 10 to 14, $2.90@$3; steel sheets 10 to 14, $3.25@$3.50; shell iron, $3@$3.25; flange iron, $4@$4.25; flange steel, $3.50; shell steel, $3.25; boiler rivets, $4@$4.25; fire box iron and steel, $4.75@$5.50; boiler tubes, 4½ inches and larger, 52½ per cent.; 2 to 4 inches, 50 per cent., and 1¾ inches and smaller, 45 per cent.

Nails.—Agents report a weakening in prices of steel cut nails. Business is light; their regular quotation is $1.70 at mill. Jobbers report a fair trade with unchanged prices at $1.90@$2 in small lots. Wire nails are probably a shade firmer at $2.40 f. o. b. Chicago; the jobbing trade still quotes $2.55, but this price would be shaded, according to quantity.

Steel Rails.—Some contracts are reported placed for winter work, with others in sight. Small lots for repairs are bringing $33@$33.50, for standard sections in large lots $32@$32.50 may be quoted.

Railway Track Supplies.—Demand continues moderately fair for repair material. Prices are: Iron fish plates, $2.15@$2.20; steel fish plates, $5.25@$2.30; bolts, square nuts, $3@$3.05; hexagon nuts, $3.10@$3.15; spikes, $2.20@$2.25, according to quantity.

Scrap Iron.—Railroad and mill are both in demand, but prices are not firm; for the lower grades but little inquiry and less demand are noted. We quote as follows: Country mixed scrap, $15.50@$16.50, according to condition; No. 1 mill, $14@$14.50; light wrought, $9@$9.50; horseshoes, $19@$19.50; axles, $26; cast machinery, $13@$14; stove plates, $9.50@$10; borings, $9.50@$10; wrought turnings, $13.50; No. 1 railroad shop or forge, $21.50; track scrap, $19.50@$20.

Old Wheels and Rails.—There is but little demand for old iron rails or old wheels, but old steel rails are in better request. Offerings are light, as mills are fairly well supplied for present use. Old iron rails are held at $26.50 f.o.b. Chicago; steel rails are steady at $19@$20, according to condition; guards and frogs, $17.50@$18.50; old car wheels are quiet, bringing $18@$18.50.

Philadelphia. Nov. 7.

(From our Special Correspondent.)

Pig Iron.—Some erroneous impressions have been created regarding the crude iron market through sales of inferior iron at "off" prices and of sales of new outside irons at a little below regular prices. Several offers have been made for representatives of new irons, but standard Pennsylvania brands are still sold at No. 1 and $17@$17.50 for Southern; No. 2, $16.50@$17.25; Southern, $15.50@$16. Standard forge irons, $15; superior makes, $14.50; Bessemer, $18@$18.50. The consumption is heavy and the output is fully equal to all requirements. Offers made for large lots to-day for winter delivery at a litle less than above prices will probably be accepted.

Muck Bars.—The market continues decidedly in favor of makers, and very little material is obtainable at present at less than $30 delivered and $29.50 at mill. Demand keeps all makers oversold.

Foreign Material.—But little is selling. No change in prices.

Merchant Bar.—Mills are still crowded with business at 1·80@1·95, according to quality and amount wanted. The industry is in excellent shape, and buyers are liberally providing for future requirements.

Nails.—Secret selling is being done at a little below orthodox quotations, which are 1·80@1·90. An effort is being made to secure winter contracts.

Skelp Iron.—Quotations are 2@2·15, respectively, for ground and sheared, and mills are full of orders.

Wrought Iron Pipe.—Prices are firm and discounts unchanged. Business is crowding capacity.

Sheet Iron.—No difference at mills is noted. Office reports are all of the same tenor. Full price and plenty business, especially in galvanized.

Plate and Tank Iron.—Mills are well off for the week, and winter orders have been taken for some days past at a shading under card rates. Ship plates, 2·25@2·50; bridge, 2·30@2·60; shell, 2·45@2·75.

Structural Iron.—Business was offered this week by parties who have large orders to place, but such concessions were demanded that the business was declined for the present. Angles, 2·20@2·30; plates, 2·30@2·40; tees, 2·70; beams and channels, 3·10.

Steel Rails.—Large orders will be placed in a few days. They are estimated by one party at 60,000 tons by three trunk lines. Quotations: $28.50@$29 for large lots, and $29.50@$30 for small. Light sections range from $32@$40, according to weight.

Old Rails.—Business could be done at $25.50.

Scrap.—Several buyers are after scrap this week at $23.

Steel Billets.—Business has been done at $30, but 50c. to $1 more is asked. Mills are crowded, and buyers are more anxious to secure themselves than makers are to cut prices.

Pittsburg. Nov. 6.

(From our Special Correspondent.)

Raw Iron and Steel.—The past week has by no means been satisfactory as regards either prices or demand. Elections, as a general thing, demoralize trade; the one last Tuesday was no exception. Transactions are being restricted; prices are generally weaker, and the values involved in sales of certain descriptions of iron are falling off compared with the past three weeks. Consumption keeps up to the highest limit ever recorded, and from present indications is likely to be maintained indefinitely. The demand for certain descriptions of iron was fair; large blocks are not so much inquired for as they were some time since; still the amount sold shows a fairly good business.

The competition between valley made iron and iron made in this vicinity, is more intense than formerly, so that a good deal of effort is required to find a place for all the lots of iron that are offered. Iron made at city furnaces is placed without much difficulty, while others often find it difficult to secure recognition. At the same time, iron can at all times find a purchaser, provided prices are made to meet the views of buyers; sales of this description have no effect on favorite or standard irons. A leading dealer thinks that "prices will be higher in the near future." Another dealer had a different view of the situation; he remarked that prices are not likely to improve, and if prices remain as they are there will not be much room for complaint. The Philadelphia gas company has shut off natural gas from all the departments of the mills, which have begun to make themselves independent of the Philadelphia Company by procuring their own gas or coal.

More trouble is brewing in the coke regions. A dispatch from Scottdale says about 7,000 coal miners and others employed by the H. C. Frick Coke Company on Wednesday quit work for some imaginary grievance. The company contends that it asks nothing outside the contract that was signed by both parties last February and has to continue for one year. This strike, should it continue, will cause trouble with the furnaces that depend on that company for their supply of coke.

Blooms and Billets.—The demand has fallen off; buyers, being generally well supplied, are offering lower prices.

Muck Bar.—The market is weaker with shaded prices.

Bessemer.—The market is weaker. One of the largest firms informed us that it had withdrawn all its iron from the market until better prices could be obtained.

Grey Forge Iron.—The same symptom of weakness prevails in this market.

Manufactured Iron.—The demand is good and prices firm.

Coke Smelted Lake and Native Ores.

2,000 Tons Bessemer, Spot	17.25 cash.
2,000 Tons Grey Forge, Jan., Feb., March	15.00 cash.
1,000 Tons Grey Forge	15.00 cash.
1,000 Tons Grey Forge	15.00 cash.
1,000 Tons Bessemer	17.00 cash.
1,000 Tons off Bessemer	15.60 cash.
1,000 Tons Grey Forge	15.00 cash.
1 000 Tons Bessemer	16.80 cash.
1,000 Tons Bessemer	16.80 cash.
1,000 Tons Bessemer, Jan'y	17.50 cash.
900 Tons Grey Forge	15.00 cash.
700 Tons Grey Forge	15.00 cash.
500 Tons Bessemer	17.00 cash.
800 Tons Mill Iron	15 00 cash.
400 Tons Bessemer	17.25 cash.
300 Tons Foundry	16.50 cash.
100 Tons No. 1 Foundry, all ore	18.00 cash.
100 Tons Silvery extra	19.50 cash.
100 Tons No. 2 Foundry	16.25 cash.
100 Tons Silvery	17.00 cash.

Muck Bar.

3,000 Tons Neutral, July, March and April	31.00 cash.
2,000 Tons Neutral, July, February and March	31.00 cash.
1,500 Tons Neutral, November and December	31.25 cash.
1,000 Tons Neutral, December and January	30.50 cash.
500 Tons Neutral, November and December	30.75 cash.

Steel Slabs and Billets.

3,000 Tons Steel Billets and Slabs at Mill	27.75 cash.
750 Tons Billets, November and December	27.50 cash.
500 Tons Nail Slabs at Mill	27 25 cash.
500 Tons Nail Slabs	27.00 cash.

Ferro-Manganese.

100 Tons 80 per cent., Baltimore	68.00 cash.

Skelp Iron.

800 Tons Narrow Grooved	1.95	4 m.
750 Tons Sheared Iron	2.30	4 m.
225 Tons Wide Grooved	1.95	4 m.

Bloom Ends.

350 Tons Bloom Ends	20.00 cash.

Old Iron Rails.

500 Tons American T's, spot	27.75 cash.
500 Tons American T's	27.50 cash.

Steel Wire Rods.

500 Tons American, fine	39.00 cash.

LATEST.—In regard to the coke strike, an agreement has just been entered into, and a committee appointed whose action will be final. In the meantime the men have returned to work, waiting the decision, which will probably occupy some days.

CHEMICALS AND MINERALS.

NEW YORK, Friday Evening, Nov. 7.

Heavy Chemicals.—Business during the week has been good, a considerable number of buyers securing winter supplies. The general condition

of the market may be described as quiet but very firm.

We quote this week: Caustic soda, 70 and 74 per cent., 3·15@3·18¾c.; 76 and 77 per cent., 3⅝@3·25c.

Carbonated soda ash, 48 per cent., 1·55@1·62½c.; 58 per cent., 1·55@1·57½c.

Caustic soda ash, 1·55@1·61½c. Alkali, 58 per cent., 1·50@1.55c.

Bleaching powder is stronger and advancing. Quotations, 1·65@1·70c., according to quantity and brand.

Sal soda is quiet at 1·15@1·17½c.

Acids.—There is nothing of interest in this market, which shows essentially the same features that it has shown for months past. The volume of business is good, and prices suit the buyer. The circular letter which we published in this column last week has not, as we foresaw, had any effect whatsoever on the market. The Knickerbocker Chemical Company says that it is desirous of bringing about a better condition of affairs, and it adds that the means has already been provided. This means, we suppose, that the "combination" imagines it fills a long-felt want. This, it is superfluous to state, does not meet with the hearty acquiescence of those who happen to be outside of its exclusive circle. The "outsiders" have paid no attention to the letter alluded to, and altogether the well-meant effort of the Philadelphia firm has come to naught.

We repeat our last quotations, as nothing has occurred to justify a change. Acid, per 100 pounds in New York and vicinity: Acetic, $1.72½@$2.20; muriatic, 18-degree, 90c@$1.20; muriatic, 20-degree, 95c.@$1.50; muriatic, 22-degree, $1@$1.75; nitric, 36-degree, $3@$3.25; nitric, 40-degree, $3.50@$4.50; nitric, 42-degree, $4@$4.75; sulphuric, 60-degree, 70@80c., and sulphuric, 66-degree, 80@95c.

Fertilizing Chemicals.—Generally speaking, the market for fertilizing chemicals presents a better appearance this week. There has been a good demand, and stocks have been decreased somewhat. On the whole quotations show little, if any, change. We quote: High grade dried blood, $1.80@$1.85. For the low grade the price is $1.70@$1.75. Azotine, $1.85@$1.90. Tankage, high grade, 9 to 10 per cent. ammonia and 15 to 20 per cent. phosphate, $19@$20 per ton, and low grade 7 to 8 per cent. ammonia and 25 to 30 per cent. phosphate, $18.25@$18.75. Fish scrap, $19@$19.50 per ton f.o.b. factory. Sulphate of ammonia, prime gas liquor, $3.25; prime bone liquor, $3.10@$3.15, with a very good market. Concentrated tankage, $1.67½@$1.70. Refuse, bone black, guaranteed 70 per cent. phosphate, $17@$17.50 per ton. Dissolved bone black is nominally 95c. per unit for available phosphoric acid, although on large lots prices might be somewhat reduced, and acid phosphate 80c. per unit for available phosphoric acid. Steamed bones, unground, $20@$23; ground, $25@$26.

Charleston rock, undried, $7@$7.50 per ton; kiln-dried, $7 per ton; f. c. b. vessels and cars, $7.25.@$7.75, according to time of delivery. Freights by sail from Charleston to New York, $2.75@$3 per ton. Charleston rock, ground, $11.75@$12.25, ex-vessel at New York.

Sulphate of potash 45 to 52 per cent. is quoted at $1.12½ per 100 pounds; manure salts, high grade, basis 90 per cent., $2.05 per 100 pounds.

Kainit.—Some business is going on, but it does not amount to very much. Quotations are unchanged at $9.75 for invoice weight and $10 for actual weight.

Muriate of Potash.—We note sales of some 300 tons and arrivals of 125 tons during the week. We quote $1.77½@$1.82½.

Brimstone.—It is rather difficult to give a description of this market. Dealers differ in their quotations and in their opinions concerning the condition of the market. We quote best unmixed seconds, $23.50, and best unmixed thirds, $23.

Nitrate of soda.—We are indebted to Mr. F. B. Nichols for the following interesting statistics issued under date of the 1st inst.:

	1890.	1889.	1888.
Stocks in store and afloat in Atlantic ports, Oct. 15, bags	46,006	55,979	82,639
Arrivals	16,350	48,092	11,561
	62,356	104,071	94,200
Previously reported, 573,349; total arrivals to date, 589,699; same time '89 446,692; same time '88, 417,561.			
Stocks	35,535	56,005	76,171
To arrive, 394,000; visible supply, 429,535; same time '89, 317,005; same time '88, 274,671.			
Stocks with dealers in store and afloat here:			
Deliveries fortnight ending Nov. 1	26,821	48,066	18,029
Previously reported	579,069	428,621	306,431
Total deliveries to Nov. 1	605,890	476,687	384,460
Sales spot	1·75@1·80	1·90@1·92	2·12@2·22

"The fortnight has been active, both spot and forward, chiefly the latter, at 1·65@1·75, according to position. Contracts for the inside figure were written as far ahead as June and July shipment. The higher prices were nearer the spot market, which is in good position for an advance. The visible supply does not include later than January and February shipments. The arrivals in the month were 'Ponemah' and 'Marquis of Lorne' at Philadelphia, 'Irene' at Charleston, and 'Sultana' and 'Xenia' at this port."

Liverpool. Oct. 29.

(Special Correspondence by Messrs. J. P. Brunner & Co.)

A fair business is passing in heavy chemicals and with the near approach of the chemical "union" scheme prices are hardening all round.

Soda ash in small compass for November at 1 5/16@1½d. for caustic and 1⅝@1½d. for carbonate according to brands.

Soda crystals in request at £3 5s.@£3 4s. 6d. per ton.

Caustic soda was very depressed at the close of last week, and owing to second-hand parcels being realized some low prices were accepted.

A good inquiry has set in, however, and resellers being pretty well cleared out, the market is decidedly firmer to-day. We quote November delivery:

60 per cent., £10 5s.@£10 10s., and 70 per cent. £11 5s.@£11 10s., the higher figures being makers' minimum quotations, 74 per cent., £12 5s.@£12 10s.

Bleach scare and nothing offering by makers at under "union" minimum price of £6 5s. for November or December.

Chlorate of potash advanced to 5½d.

Bicarbonate of soda unobtainable for prompt delivery, and £7 per ton bottom price for ewt. kegs, late November or early December shipment.

Sulphate of ammonia dull, but there being no pressure to sell, prices steady at £11 13s. 9d.@£11 15s. for good gray, 24 per cent., in double bags, f.o.b. Liverpool.

With reference to the proposed chemical union, the prospectus is expected to be out within the next ten days, and the organizers seem confident of success.

BUILDING MATERIAL MARKET.

NEW YORK, Friday Evening, Nov. 7.

Bricks.—There is a good, full supply of bricks on the spot, and the demand, as compared with last week's, has increased somewhat. Our quotations are: Haverstraw's, $5.50@$6.25 per thousand; Uprivers, $5@$5.50; Jerseys, $4.75@$5.50; pale, $3@$3.50.

Lime.—There is very little Maine lime here, and very little on the way. Scarcely one-half of the kilns in the Maine lime district are going. The St. Johns product is also in limited supply, there being only between 4,000 and 5,000 barrels here. Prices are unchanged, and we accordingly repeat our last quotations: Rockland lime, common, 90c., and finishing, $1.10; St. John, common and finishing, 80@90c.; Glen Falls, common and finishing, 90@$1.10.

Cement.—There is very little change in this market. Business is fair and quotations are repeated: Rosendale, $1@$1.10; Portland, American, $2.25@$2.50; foreign, $2.35@$2.75; special brands, $2.60@$2.85; Roman, $2.80@$3; Keene's coarse, $4.50@$5.50; Keene's fine, $7.25@$8.50 per barrel.

IMPORTS AND EXPORTS OF METALS AT NEW YORK FROM OCTOBER 25 TO NOVEMBER 1 AND FROM JANUARY 1.

IMPORTS.

Spelter.	Week. Tons.	Year. Tons.
Amer. Metal Co		372
Hendricks Bros		50
La Marche's Sons, H		5
Lewisohn Bros		150
Meyer, G. A. & E		9
Milne & Co		74
Muller, Schall & Co		123
Total		783
Corres. date, 1889		685

Pig Lead.	Lbs.	Lbs.
Amer. Metal Co	100	460
Bruce & Cook		25
Caswell, E. A		211
Hendricks Bros	50	150
Naylor & Co		10
Paulsen, Wm		350
Schultz & Co., A		98
G. W. Sheldon		149
Total	150	1,453
Corres. date, 1889		251

Tin.	Tons.	Tons.
Abbot, Jere, & Co.	60	225
Amer. Metal Co	245	2,756
Bidwell & French	147	1,260
Bruce & Cook		20
Carter, Hawley & Co		80
Cohen & Co., A	10	20
Cohen, H		20
Cort & Co., N. L		150
Crooke Smelting & Ref. Co		6
Crooks & Co., R		85
Davol & Son		49
Hendricks Bros	10	52
Knauth & Kuhne		10
Lehmaier, S., & Co		172
Lewisohn Bros	75	120
Merchant & Co		80
Muller, Schall & Co.	50	1,000
Naylor & Co	100	1,555
Nissen, Geo		10
Phelps, Dodge & Co		3,596
Pope, Thos. J. Sons	10	10
Schultz & R		50
Thomson, A. A. & Co.	20	80
Thomson, D. & Co.		107
Tompkins, Geo. V.		10
Townsend, & Co., J. R.		50
Trotter & Co, N		75
Total	727	11,448
Corres. date, 1889	525	9,526

Tin Plates.	Boxes.	Boxes.
Adams & West'keCo		70
Bruce & Cook		119,219
Byrne & Son		1,000
Central Stamp. Co.	69	57,294
Coddington & Co	2,975	135,027
Cohn & Co	331	17,647
Con. Fruit Jar Co		120
Cormere F. & Co		7,902
Cort & Co	213	196,524
Crooks & Co	129	89,117
De Milt & Co, H R		12,763
Dickerson, V. D. & Co		321,922
Fenton, D. E		4,491
Haberman, F		66
Herring, Chas. E		1,000
Iron Clad Mfg. Co		597
Lalance & G. M. Co		9,118
Lazard Bros		1,048
Lehmaier, Schw'z & Co		200
Merchant & Co	223	28,015
Mersick & Co		11,907
Morewood & Co		40,739
Newell Bros		416
Payne, S. H. & Co.		934
Pratt Mfg. Co		95,271
Phelps, Dodge & Co		715,855
Schneider & Co., J		3,365
Shepard & Co., S		15,684
Shepherd & Co., W		200
Standard Oil Co	1,400	26,063
Taylor, N. & G		1,429
Thomson & Co., A. A.	323	97,359
Warren, J. M		4,868
Wheeler & Co		29,276
Whittemore & Co.		14,518
Wolff & Reesing		2,077
Wright, Peter & Co.		227
Total	5,663	2,063,358
Corres. date, 1889	22,260	1,933,648

Pig Iron.	Tons.	Tons.
Abbott & Co., Jere		250
Baldwin & Co., A		807
Baldwin Bros. & Co.		170
Crocker Bros		1,515
Crooks & Co., R		5
Dana & Co		150
Drummond & Co	200	600
Geisenheimer & Co		76
Hagermeyer & Brun		30
Henderson Bros	230	330
Irvin, R. I. & Co		400
Lilienberg, N		2,400
Naylor & Co		150
Perry & Reyer		53
Pierson & Co		30
Sheldon, G. W. & Co.		200
Stetson & Co., G. W.		2,725
Williamson, J. & Co.	50	1,850
Total	480	11,750
Corres. date, 1889	400	27,866

Steel Blooms, Billets, and Slabs.	Tons.	Tons.
Abbott & Co		233
Baldwin Bros. & Co		2
Dana & Co		1,670
Dolge & Co., A		1
Downing, R. F. & Co.		109
Henderson Bros		1
Holt & Co., H. N		4
Martin & Co		80
Milne, A., & Co		225
Naylor & Co	650	2,948
Pope, Jas. E., Jr.		61
Richards & Co., C. B.		1
Roebling's Sons, J. A.		2,074
Ward & Co., J. C		198
Wolff, & Co., R. H.		60
Total	650	7,667
Corres. date, 1889	51	23,114

Bar Iron.	Tons.	Tons.
Abbott & Co., Jere.	100	921
Bacon & Co		1,319
Crocker Bros		77
Dickerson, Van Dusen & Co		6
Downing & Co		285
E. J. Jacobus		104
Fuller, Dana & Fitz		11
Holt, H. N		230
Lilienberg, N		556
Lundberg, G	125	2,602
Milne & Co		1,189
Muller, Schall & Co.		304
Naylor & Co	25	854
Page, Newell & Co.		1,855
Plenty, J		14
Wilson, J. G		3
Total	250	10,330
Corres. date, 1889		8,909

Scrap Iron.	Tons.	Tons.
Baldwin Bros. & Co.		7
Crossman & Co., W. H.		30
Frankfort, M		347
Leary, D		27
McDougall & Potter		92
Muller, Schall & Co		18
Pierson, C. L		101
Samper & Co., S		186
Stevens, Corvin & Co		30
Ward, J. E. & Co.		737
Total		1,575
Corres. date, 1889		3,331

Steel and Iron Rods.	Tons.	Tons.
Abbott & Co	191	9,508
American S. Co		765
Bacon & Co		546
Bunnell & Co., J. H.		50
Carey & Moen	20	546
Cooper, Hewitt & Co		371
Dana & Co		1,196
Dodge & Co., A		3
Downing & Co		129
Galpin, S. A		1,241
Greely & Co. E. S.		35
Hazard Mfg. Co	30	536
Holt & Co., H. N		3
Jacobus, E. Y		8
Lee, James & Co		1,752
Lillienberg, N		300
Lundberg, G		157
Lundell, C. G		5
Milne & Co	197	1,945
Muller, Schall & Co.		850
Naylor & Co	51	7,003
Page, Newell & Co.		1,652
Roebling's Sons, J. A.		2,687
Sanderson & Son		1
Schulze & R		1
Taylor, N. L		16
Temple & Lockw'd		6
Wallace, W		5
Wessel & Co		21
Wiebusch & Ho		4
Wood & Niebuhr		25
Wolf & Co., R. H.	10	3,409
Total	499	34,277
Corres. date, 1889	142	39,165

Old Rails.	Tons.	Tons.
Bowring & Archibald		340
Dana & Co		779
Frankfort, M	154	9,013
Henderson Bros		300
Hernsheim, L		350
Moele Bros		123
Naylor & Co		3,099
Sawyer, Wallace & Co		610
West, H		398
Wiechers, J. F	450	600
Total	604	15,613
Corres. date, 1889	62	10,609

Spiegeleisen.	Tons.	Tons.
Abbott, Jere & Co.		2,725
American Metal Co		100
Blakely & McLellan		1,584
Crocker Bros	231	23,277
Crooks & Co. R		106
Dana & Co		15,250
Foley, F		50
Geisenheimer & Co.		858
Henderson Bros. & Co.		14
Hernsheim, L	750	20,902
Holt, H. N		200
Ivin & Co., R. L		50
Naylor & Co		13,158
Perkins, C. L		1,452
Sachs & Richmond		2
Whittemore, H. & Co.	40	95
Total	1,071	80,623
Corres. date, 1889	1,056	70,019

Iron Ore.	Tons.	Tons.
Baiz, Jacob		67
Bergen Point Chemical Co		3,350
Bowring & Archibald		5,292
Earnshaw, A		3,674
Ennis, Andrew		438
Flores & Co., R. de		14,143
Hill, Frank	700	700
Johnson & Co., L		5,070
Total	700	32,694
Corres. date, 1889		9,436

EXPORTS.

Copper.	Pounds.	Pounds.
Abbott & Co., Jere		2,545,103
Amer. Met. Co., L		940,385
Barber & Co		13,750
Belmont, Aug. & Co		1,763,974
Boker, C. F		117,000
Burgass & Co		227,290
French, Edye & Co		135,374
Heidelbech, Sichelheimer & Co		672,608
Lewisohn Bros		251,478
Muller, Schall & Co		16,250
Paulsen, Wm		50,000
Sawyer, W'l'ce & Co		22,795
Seamen, S. H		66,950
Ward, J. E. & Co.		100,000
Wiechers, J. F		20,97[illegible]
Wil'ms & T'hune		112,00[illegible]
Total		7,029,939
Corre. date, 1889	427,707	11,560,044

Copper Matte.		
American Metal Co		3,072,079
Lewisohn Bros.	14,166,895	20,439,662
Nichols, Geo. H		267,202
Paulsen, Wm		1,039,428
Wil'ms & T'hune		2,848,706
Total	14,166,895	27,667,077
Corres. date 1889		29,691,469

DIVIDEND-PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and Amount of last	Dividends. Total paid.	Dividends. Date & amount of last.
1	Adams, s. L.	Colo.	$1,500,000	150,000	$10	*			$555,000	Jan. 1887 .10
2	Alice, s. C.	Mont.	10,000,000	400,000	25	*			850,000	July 1890 .06½
3	Alma&Nel Wood C.,g	Idaho	300,000	30,000	10	*			60,000	Jan. 1889 .50
4	American & Nettie,c.	Colo.	.....	300,000	.....	.....	.....	.....	150,000	Nov. 1889 .10
5	Amy & Silversmith,s.	Mont.	.....	341,419	.....	.....	.....	.....	247,530	Aug. 1887 .12½
6	Atlantic, c.	Mich.	1,000,000	40,000	25	$280,000	April 1875	$1.00	660,000	Aug. 1890 1.00
7	Argenta, s.	Nev.	10,000,000	100,000	100	335,000	July 1889	.10	40,000	Feb. 1880 .20
8	Aspen Mg. & S., s. L.	Colo.	2,000,000	200,000	10	*			540,000	Nov. 1890 .10
9	Aurora, I.	Mich.	2,000,000	160,000	20	.....	.....	.....	155,000	Oct. 1887 1.87½
10	Badger, s.	Ont.	250,000	50,000	5	.....	.....	.....	37,500	Mar. 1890 .15
11	Bassick, G. S.	Colo.	10,000,000	100,000	100	*			400,000	Mar. 1884 1.00
12	Belle Isle, s.	Nev.	10,000,000	100,000	100	190,000	Dec. 1889	.15	300,000	Dec. 1879 .25
13	Belcher, G. S.	Nev.	10,400,000	104,000	100	2,978,000	June 1890	.50	15,397,000	April 1876 1.00
14	Bellevue, Idaho, s. L.	Idaho	1,250,000	125,000	10	120,000	Dec. 1889	.25	200,000	Jan. 1887 .10
15	Bi-Metallic, s.	Mont.	5,000,000	200,000	25	.....	.....	.....	150,000	Sept. 1890 .25
16	Bodie Con., G. S.	Cal.	10,000,000	100,000	100	575,000	Nov. 1889	.25	1,602,572	April 1885 .50
17	Boston & Mont., G.	Mont.	2,500,000	250,000	10	*			520,000	June 1886 1.15
18	Boston & Mont., C. S.	Mont.	2,500,000	100,000	25	*			1,450,000	Aug. 1890 .50
19	Breece, s.	Colo.	5,000,000	200,000	25	*			2,500	Feb. 1890 .01
20	Brooklyn Lead, L. S.	Utah	50,000	50,000	10	.....	.....	.....	127,000	July 1887 .05
21	Bulwer, G.	Cal.	10,000,000	100,000	10	130,000	Aug. 1889	.25	175,000	Jan. 1884 .10
22	Bunker Hill & Sull.	Idaho	3,000,000	300,000	10	*			150,000	Oct. 1883 .06⅔
23	Caledonia, G.	Dak.	10,000,000	100,000	100	505,000	May 1885	.15	194,000	Oct. 1890 .08
24	Calliope, s.	Colo.	1,000,000	1,000,000	.....	.....	.....	.....	90,000	April 1890 .01
25	Calumet & Hecla, C.	Mich.	2,500,000	100,000	25	1,200,000	.....	.....	34,350,000	May 1890 5.00
26	Carbonate Hill, s. L.	Colo.	1,500,000	200,000	10	*			80,000	April 1884 .05
27	Carlisle, G.	N. M.	1,000,000	200,000	5	.....	.....	.....	175,000	Dec. 1888 .12½
28	Castle Creek, G.	Idaho	100,000	100,000	1	.....	.....	.....	51,000	Oct. 1883 .03
29	Cataipa, s. L.	Colo.	3,000,000	300,000	10	*			270,000	May 1884 .10
30	Central, C.	Mich.	500,000	20,000	25	100,000	Oct. 1861	.65	1,950,000	Feb. 1890 1.00
31	Chrysolite, s. L.	Colo.	10,000,000	200,000	50	*			1,650,000	Dec. 1884 .25
32	Colorado Central, s. L.	Colo.	2,750,000	275,000	10	.....	.....	.....	406,250	Aug. 1889 .05
33	Confidence, s. L.	Nev.	.....	24,960	.....	328,880	May 1890	.75	199,680	April 1890 1.00
34	Cons. Cal. & Va., G. S.	Nev.	21,600,000	216,000	100	108,000	Jan. 1885	.20	3,466,800	April 1890 .25
35	Contention, s.	Ariz.	12,500,000	250,000	50	.....	.....	.....	12,587,500	Dec. 1884 .25
36	**Cop. Queen Con., C.	Ariz.	1,400,000	140,000	10	.....	.....	.....	210,000	Feb. 1889 .50
37	Crescent, s. L. G.	Utah	15,000,000	600,000	25	*			228,000	Oct. 1888 .03
38	Crown Point, G. S.	Nev.	10,000,000	100,000	100	2,425,000	Sept. 1889	.50	11,588,000	Jan. 1875 2.00
39	Daly, s. L.	Utah	3,000,000	150,000	20	.....	.....	.....	1,669,000	Oct. 1890 .25
40	Deer Creek, s. G.	Idaho	1,000,000	200,000	5	*			20,000	June 1889 .05
41	Deadwood-Terra, G.	Dak.	5,000,000	200,000	25	*			1,000,000	Nov. 1887 .10
42	Derbec B. Grav., G. S.	Cal.	10,000,000	100,000	100	90,000	Dec. 1881	.10	240,000	Oct. 1890 .10
43	Dunkin, s. L.	Colo.	5,000,000	200,000	25	*			390,000	Oct. 1889 .05
44	Dunstone, G. S. L.	Mont.	1,000,000	200,000	5	*			6,000	Nov. 1888 .03
45	Eclipse.	Colo.	100,000	100,000	1	.....	.....	.....	20,000	Nov. 1887 .10
46	Elkhorn, G. S.	Mont.	1,000,000	100,000	10	50,000	July 1883	.50	850,000	July 1887 .05
47	Empire Lt., G.	Mont.	500,000	100,000	5	.....	.....	.....	70,500	Oct. 1887 .37½
48	Eureka Con., G. S. L.	Nev.	5,000,000	50,000	100	550,000	June 1889	.50	4,850,000	Oct. 1890 .25
49	Evening Star, S. L.	Colo.	500,000	50,000	10	*			1,458,000	Dec. 1889 .25
50	Excelsior, G.	Cal.	10,000,000	100,000	100	563,000	Sept. 1885	1.00	875,000	Oct. 1890 .25
51	Father de Smet, G.	Dak.	10,000,000	100,000	100	200,000	Nov. 1878	1.00	1,125,000	Dec. 1885 .20
52	Franklin, C.	Mich.	1,000,000	40,000	25	220,000	June 1871	.....	960,000	Jan. 1889 2.00
53	Freeland, G. S. C.	Colo.	5,000,000	200,000	25	*			180,000	July 1889 .10
54	Garfield Lt., G. S.	Nev.	500,000	100,000	5	.....	.....	.....	95,000	April 1889 .12½
55	Gould & Curry, G. S.	Nev.	10,800,000	108,000	100	3,988,800	Sept. 1890	.25	2,826,000	Oct. 1870 10.00
56	Grand Prize, S.	Nev.	10,000,000	100,000	100	785,000	Jan. 1890	.30	525,000	Jan. 1890 .30
57	Granite, S. L.	Idaho	500,000	500,000	1	*			28,400	Oct. 1889 .02
58	Granite Mountain, S.	Mont.	10,000,000	400,000	25	.....	.....	.....	9,200,000	July 1890 .50
59	Green Mountain, G.	Cal.	1,250,000	125,000	10	*			212,000	Nov. 1881 .07½
60	Hale & Norcross, G. S.	Nev.	11,200,000	112,000	100	5,142,800	April 1890	.50	1,162,000	July 1888 .50
61	Hecla Con., S. & L. C.	Mont.	1,500,000	30,000	50	.....	.....	.....	1,500,000	April 1889 .50
62	Hel'a Mg.& Red,G.S.L.	Mont.	3,315,000	663,000	5	*			197,979	July 1886 .06
63	Holmes, S.	Nev.	10,000,000	100,000	100	370,000	May 1890	.25	75,000	April 1886 .25
64	Holyoke, G.	Idaho	200,000	200,000	1	.....	.....	.....	27,000	Feb. 1883 .10
65	Homestake, G.	Dak.	12,500,000	125,000	100	200,000	July 1878	1.00	5,595,750	Oct. 1890 .10
66	Honorine, S. L.	Utah	500,000	250,000	2	37,500	April 1889	.05	125,000	Sept. 1887 .05
67	Hope, S.	Mont.	1,000,000	100,000	10	*			233,252	April 1888 .25
68	Horn-Silver, S. L.	Utah	10,000,000	400,000	25	*			4,150,000	June 1890 .12½
69	Hubert, G.	Colo.	1,000,000	1,000,000	1	*			247,000	Dec. 1889 .00½
70	Idaho, G.	Cal.	310,000	3,100	100	.....	.....	.....	5,235,900	Dec. 1889 5.00
71	Ideal, S. L.	Colo.	1,500,000	50,000	10	.....	.....	.....	15,000	Oct. 1886 .05
72	Illinois, S.	N. M.	100,000	100,000	1	*			45,000	April 1889 .20
73	Independence, S.	Nev.	10,000,000	100,000	100	340,000	Oct. 1886	.20	225,000	Sept. 1879 .25
74	Iron Hill, S.	Dak.	2,500,000	250,000	10	134,000	July 1889	.03	156,250	Nov. 1887 .07½
75	Iron-Silver, S. L.	Colo.	10,000,000	500,000	20	*			2,500,000	April 1889 .20
76	Jackson, G. S.	Nev.	5,000,000	50,000	100	237,500	Nov. 1890	.20	55,000	June 1889 .10
77	Jay Gould.	Mont.	2,000,000	40,000	5	*			459,000	May 1890 .04
78	Jocuistita, L.	Mex.	2,500,000	250,000	10	.....	.....	.....	1,250,000	Feb. 1885 .50
79	Jumbo, G.	Colo.	2,000,000	200,000	10	.....	.....	.....	35,000	Oct. 1887 .02½
80	Kearsarge, C.	Mich.	1,250,000	50,000	25	130,000	Oct. 1887	1.00	100,000	Jan. 1890 2.00
81	Kentuck.	Nev.	3,000,000	30,000	100	406,930	Aug. 1890	.30	1,350,000	Dec. 1886 .10
82	La Platta, S. L.	Colo.	2,000,000	200,000	10	*			610,000	Sept. 1882 .30
83	Leadville Con., S. L.	Colo.	4,000,000	400,000	10	*			4,425,000	April 1889 .05
84	Lexington, G. S.	Mont.	4,000,000	40,000	100	*			609,000	Jan. 1885 2.00
85	Little Chief, S. L.	Colo.	10,000,000	200,000	50	*			810,000	Jan. 1890 .05
86	Little Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*			1,050,000	Mar. 1890 .50
87	Little Rule.	Colo.	500,000	500,000	1	.....	.....	.....	30,000	June 1890 .02
88	Mammoth.	Utah	10,000,000	400,000	25	.....	.....	.....	480,000	Aug. 1890 .10
89	Martin White, S.	Nev.	10,000,000	100,000	100	1,225,000	Oct. 1890	.25	140,000	Dec. 1886 .25
90	Mary Murphy, G. S.	Colo.	350,000	3,500	100	*			175,000	May 1888 5.00
91	Matchless, S.	Colo.	500,000	500,000	1	.....	.....	.....	15,000	Feb. 1890 .00½
92	May Mazeppa.	Colo.	1,000,000	100,000	1	*			50,000	Oct. 1890 .01
93	Minnesotta, C.	Mich.	1,000,000	40,000	25	420,000	April 1886	1.00	1,820,000	Mar. 1876 .....
94	Mono, G.	Cal.	5,000,000	50,000	100	760,000	Sept. 1890	.25	12,500	Mar. 1886 .25
95	Montana, Lt., G. S.	Mont.	3,300,000	660,000	5	*			2,489,675	Oct. 1890 .06
96	Morning Star, S. L.	Colo.	1,000,000	100,000	10	.....	.....	.....	850,000	Dec. 1889 .20
97	Moulton, S. G.	Mont.	2,000,000	400,000	5	*			380,000	Dec. 1887 .07½
98	Mount Pleasant, G.	Cal.	150,000	150,000	1	*			150,000	Feb. 1887 .30
99	Mt. Diablo, S.	Nev.	5,000,000	50,000	100	137,500	June 1880	2.00	160,000	Oct. 1889 .20
100	Napa, Q.	Cal.	700,000	100,000	7	.....	.....	.....	380,000	Oct. 1890 .10
101	Navajo, G. S.	Nev.	10,000,000	100,000	100	500,000	April 1890	.15	365,000	April 1889 .10
102	New Guston, S.	Colo.	500,000	100,000	5	.....	.....	.....	337,500	April 1889 .50
103	N. Hoover Hill, G. S.	N. C.	300,000	120,000	2½	*			30,000	Dec. 1885 .06½
104	Northern Belle, S.	Nev.	5,000,000	50,000	100	425,000	Jan. 1884	8.00	2,400,000	April 1883 .50
105	North Belle Isle, S.	Nev.	10,000,000	100,000	100	395,000	April 1890	.20	230,000	May 1888 .50
106	North Star, G.	Cal.	1,000,000	100,000	10	.....	.....	.....	250,000	Dec. 1889 .50
107	Ontario, S. L.	Utah	15,000,000	150,000	100	.....	.....	.....	11,375,000	Oct. 1890 .10
108	Ophir, G. S.	Nev.	10,000,000	100,000	100	4,210,640	April 1890	.50	1,595,800	July 1882 1.00
109	Original, S. C.	Mont.	1,500,000	60,000	25	*			123,000	July 1888 .05
110	Oro.	Colo.	500,000	100,000	5	.....	.....	.....	60,000	June 1890 .20
111	Osceola, C.	Mich.	1,250,000	50,000	25	480,000	April 1876	1.60	1,447,500	Dec. 1889 .50
112	Oxford, G. S.	Nev.	125,000	125,000	1	*			78,500	Sept. 1888 .02
113	Paradise Valley, G. S.	Nev.	10,000,000	100,000	100	57,000	April 1888	.15	150,000	April 1887 .10
114	Parrot, C.	Mont.	1,800,000	180,000	10	.....	.....	.....	696,000	Sept. 1890 .10
115	Peacock, S. G. C.	N. M.	2,000,000	200,000	10	*			60,000	Nov. 1886 .....
116	Plumas Eureka, G.	Cal.	1,406,250	140,625	10	.....	.....	.....	2,548,046	Oct. 1889 .37½
117	Plutus, G. S. C. L.	Colo.	2,000,000	200,000	10	*			20,000	Feb. 1886 .10
118	Plymouth Con., G.	Cal.	5,000,000	100,000	50	*			2,280,000	Feb. 1888 .40
119	Quicksilver, pref., G.	Cal.	4,300,000	43,000	100	.....	.....	.....	1,705,791	Aug. 1890 1.50
120	" com., Q.	Cal.	5,700,000	57,000	100	.....	.....	.....	643,867	July 1882 .40
121	Quincy, C.	Mich.	1,000,000	40,000	25	200,000	Dec. 1862	.....	5,570,000	Aug. 1890 5.00
122	Republic, C.	Mich.	5,000,000	100,000	50	400,000	Dec. 1889	.30	4,312,587	June 1887 1.25
123	Richmond, S. L.	Nev.	1,350,000	54,000	25	*			99,785	Feb. 1890 .50
124	Ridge, C.	Mich.	500,000	20,000	25	219,939	Mar. 1886	.50	585,000	Mar. 1886 .05
125	Robinson, S. L.	Colo.	10,000,000	200,000	50	*			100,000	Dec. 1882 .50
126	Robert E. Lee, S. L.	Colo.	10,000,000	500,000	20	.....	.....	.....	4,460,000	July 1869 3.00
127	Savage, S.	Nev.	11,200,000	112,000	100	6,604,000	Nov. 1889	.50	7,500	April 1883 .01
128	Shoshone, G.	Idaho	150,000	150,000	1	.....	.....	.....	1,568,145	April 1888 .12½
129	Sierra Buttes, G.	Cal.	2,225,000	122,500	10	.....	.....	.....	102,000	Jan. 1871 1.00
130	Sierra Nevada, G. S.	Nev.	10,000,000	100,000	100	6,236,910	May 1890	.50	270,000	April 1889 .10
131	Sierra Nevada, S. L.	Idaho	1,000,000	1,000,000	1	*			40,000	May 1889 .02
132	Silver Cord, G. S. L.	Colo.	4,500,000	450,000	10	.....	.....	.....	270,000	April 1889 .10
133	Silver King, S.	Ariz.	10,000,000	100,000	100	130,000	Sept. 1890	.30	1,950,000	July 1887 .25
134	Silver Mg. of L. V.	N. M.	500,009	500,000	1	*			250,000	Oct. 1890 .05
135	Silverton, G. S. L.	Colo.	2,000,000	200,000	10	*			50,000	Jan. 1881 .25
136	Small Hopes Con., S.	Colo.	5,000,000	250,000	20	*			3,162,500	Oct. 1890 .25
137	Spring Valley, G.	Cal.	200,000	200,000	1	50,000	Oct. 1886	.25	3,595,000	June 1888 .05
138	Standard, G. S.	Cal.	10,000,000	100,000	100	100,000	June 1890	.50	155,000	Nov. 1881 .05
139	Stormont, S.	Utah	500,000	500,000	1	*			844,000	Dec. 1887 .20
140	St. Joseph, L.	Mo.	1,500,000	150,000	10	*			9,000	April 1888 .02½
141	Swansea, G.	Colo.	600,000	60,000	10	*			100,000	Nov. 1881 .20
142	Tamarack, C.	Mich.	1,000,000	40,000	25	520,000	April 1885	3.00	1,670,000	Oct. 1890 4.00
143	Tombstone, G. S. L.	Ariz.	12,500,000	500,000	25	*			1,250,000	April 1882 .10
144	United Verde, C.	Ariz.	3,000,000	300,000	10	*			97,500	Feb. 1884 .10
145	Valencia, M.	N. M.	150,000	1,500	100	*			41,250	April 1886 2.50
146	Viola Lt., S. L.	Idaho	750,000	150,000	5	.....	.....	.....	272,500	Oct. 1887 .37½
147	Ward Con., S. L.	Colo.	2,000,000	200,000	10	.....	.....	.....	20,000	Dec. 1889 .05
148	Yankee Girl.	Colo.	2,500,000	250,000	10	.....	.....	.....	1,275,000	July 1887 .10
149	Yellow Jacket, G. S.	Nev.	12,000,000	120,000	100	5,508,000	Mar. 1889	.50	2,148,000	Aug. 1871 1.50
150	Week City, L. L.	Mo.	55,000	11,000	5	.....	.....	.....	4,400	July 1889 .10
151	Woodside.	Utah	.....	.....	.....	.....	.....	.....	25,000	Oct. 1889 .25
152	Young America.	Cal.	.....	.....	.....	.....	.....	.....	175,000	..... 1889 .10

NON-DIVIDEND PAYING MINES.

	Name and Location of Company.	Capital Stock.	Shares. No.	Shares. Par	Assessments. Total levied.	Assessments. Date and am't of last.
1	Agassiz Cons., s. L.	Colo.	$2,500,000	50,000	$50	*
2	Allegheny, s.	Colo.	5,000,000	500,000	10	.....
3	Alloucz, G.	Mich.	2,000,000	80,000	25	$737,000 Jan. 1890 .70
4	Alpha Con., G. S.	Nev.	3,000,000	30,000	100	112,500 Sept. 1890 .25
5	Alta, s.	Nev.	10,080,000	100,800	100	3,359,800 Sept. 1890 .50
6	Amador, G.	Cal.	400,000	200,000	2	*
7	American Flag, s.	Colo.	1,250,000	125,000	10	300,000 June 1887 .....
8	Amity, s.	Colo.	250,000	250,000	1	.....
9	Anglo-Montana, Lt.	Mont.	600,000	120,000	5	.....
10	Astoria, G.	Cal.	200,000	100,000	2	.....
11	Barcelona, G.	Nev.	5,000,000	200,000	25	*
12	Bechtel Con., G.	Cal.	10,000,000	100,000	100	173,500 Jan. 1883 .10
13	Belmont, S.	Nev.	5,000,000	50,000	100	735,000 April 1886 .10
14	Best & Belcher, G. S.	Nev.	10,080,000	100,800	100	2,279,275 Aug. 1890 .25
15	Big Pittsburg, S. L.	Colo.	20,000,000	200,000	100	*
16	Black Oak, G.	Cal.	3,000,000	300,000	10	*
17	Boston Con., G.	Cal.	10,000,000	100,000	100	170,000 Nov. 1883 .25
18	Bremen, S.	N. M.	5,000,000	500,000	10	*
19	Brownlow, S.	Colo.	250,000	250,000	1	.....
20	Brunswick, G.	Cal.	2,000,000	400,000	5	*
21	Bullion, G. S.	Nev.	10,000,000	100,000	100	2,790,000 Dec. 1889 .25
22	Calaveras, G.	Cal.	500,000	500,000	1	*
23	Carisa, G.	Wy.	500,000	100,000	5	*
24	Carupano, G. S. L. C.	Ven.	200,000	100,000	2	*
25	Cashier, G. S.	Colo.	500,000	250,000	2	*
26	Charles Dickens, G. S.	Idaho	1,250,000	250,000	5	*
27	Cherokee, G.	Cal.	1,500,000	150,000	10	.....
28	Chollar, G.	Nev.	11,200,000	112,000	100	1,540,000 Nov. 1889 .50
29	Cleveland, T.	Dak.	1,000,000	500,000	2	*
30	Colchis.	N. M.	500,000	50,000	10	.....
31	Commonwealth, S.	Nev.	10,000,000	100,000	100	170,000 Nov. 1888 .50
32	Comstock, G. S.	Nev.	10,000,000	100,000	100	35,000 Mar. 1887 .15
33	Con. Imperial, G. S.	Nev.	5,000,000	50,000	100	1,875,000 July 1890 .05
34	Con. Pacific, G.	Cal.	6,000,000	60,000	100	198,000 June 1890 .10
35	Con. Silver, S.	Mo.	2,500,000	250,000	10	.....
36	Crescent, S. L.	Colo.	3,000,000	300,000	10	*
37	Crocker, S.	Ariz.	10,000,000	100,000	100	150,000 June 1890 .15
38	Crowell, G.	N. C.	500,000	500,000	1	.....
39	Dahlonega, G.	Ga.	250,000	250,000	1	*
40	Dandy, S.	Colo.	5,000,000	500,000	10	.....
41	Decatur, G.	Colo.	1,500,000	300,000	5	*
42	Denver City, S. L.	Colo.	5,000,000	500,000	10	*
43	Denver Gold, G.	Colo.	300,000	60,000	5	.....
44	Durango, G.	Colo.	500,000	500,000	1	*
45	Eastern Dev. Co., Lt.	N. S.	1,500,000	150,000	10	980,000 Mar. 1886 1.00
46	El Cristo, G. S.	U.S.C.	1,000,000	500,000	2	.....
47	El Dorado, G.	U.S.C.	1,000,000	250,000	4	*
48	El Tabonto, G.	U.S.C.	1,000,000	500,000	2	.....
49	Empire, S.	Utah	10,000,000	100,000	100	*
50	Eureka Tunnel, S. L.	Nev.	10,000,000	100,000	100	*
51	Exchequer.	Nev.	10,000,000	100,000	100	865,000 July 1890 .25
52	Found Treasure, G. S.	Nev.	10,000,000	100,000	100	81,500 May 1890 .25
53	Gogebic Min., I.	Wis.	5,000,000	200,000	25	.....
54	Gold Cup, S.	Colo.	500,000	500,000	1	*
55	Golden Era, S.	Mont.	2,000,000	200,000	10	*
56	Gold Placer, G.	Colo.	5,000,000	200,000	25	229,314 Dec. 1885 .25
57	Gold Rock, G.	Cal.	1,000,000	500,000	2	*
58	Goodshaw, G.	Cal.	10,000,000	100,000	100	*
59	Grand Belt, C.	Nex.	12,000,000	120,000	100	.....
60	Grand Duke.	Colo.	800,000	80,000	10	.....
61	Great Remance, G.	U.S.C.	1,000,000	500,000	2	*
62	Gregory-Bobtail, G.	Colo.	550,000	550,000	1	*
63	Gregory Con., G.	Mont.	3,000,000	300,000	10	.....
64	Hariem M. & M. Co., G.	Cal.	1,000,000	200,000	5	.....
65	Head Cent. & Tr., S. G.	Ariz.	10,000,000	100,000	100	.....
66	Hector, G.	Cal.	1,500,000	300,000	5	45,000 Jan. 1889 .15
67	Highland, C.	Mich.	500,000	25,000	20	.....
68	Holywood.	Cal.	200,000	100,000	2	.....
69	Hortense, S.	Colo.	2,000,000	200,000	10	.....
70	Huron, C.	Mich.	1,000,000	40,000	25	280,000 May 1887 3.00
71	Iron, Gold & Silver, S.	N. M.	2,000,000	200,000	10	*
72	Ironton, I.	Wis.	1,000,000	40,000	25	.....
73	Iroquois, C.	Mich.	1,250,000	50,000	25	.....
74	J. D. Keymert.	Ariz.	10,000,000	100,000	100	.....
75	Julia Con., G. S.	Nev.	11,000,000	110,000	100	1,463,000 Jan. 1889 .10
76	Lacrosse, G.	Colo.	1,000,000	100,000	10	*
77	Lee Basin, S. L.	Colo.	5,000,000	500,000	10	*
78	Mayflower Gravel.	Cal.	1,000,000	100,000	10	585,000 Mar. 1890 .56
79	Medora, G.	Dak.	250,000	250,000	1	.....
80	Mexican, G. S.	Nev.	10,000,000	100,000	100	2,791,960 Oct. 1890 .25
81	Middle Bar, G.	Cal.	400,000	200,000	2	*
82	Mike & Starr, S. L.	Colo.	1,000,000	200,000	5	*
83	Mollie Gibson.	Colo.	2,000,000	100,000	2	.....
84	Monitor, G.	Colo.	100,000	1,000,000	1	*
85	Mutual Mg. & Sm.	Utah	100,000	100,000	1	*
86	Native, C.	Mich.	1,000,000	40,000	25	.....
87	Neath, G.	Colo.	1,000,000	100,000	10	.....
88	Nevada Queen, S.	Nev.	10,000,000	100,000	100	200,000 Oct. 1889 .25
89	New Germany, G.	N. S.	100,000	100,000	1	*
90	New Pittsburg, S. L.	Colo.	2,000,000	200,000	10	*
91	N. Comstock, S.	Nev.	10,000,000	100,000	100	85,000 April 1890 .25
92	North Standard, G.	Cal.	10,000,000	100,000	100	20,000 Nov. .....
93	Noonday.	Cal.	600,000	60,000	10	208,000 Dec. 1881 .10
94	Oneida Chief, G.	Cal.	500,000	125,000	100	*
95	Oriental & Miller, S.	Nev.	10,000,000	400,000	25	*
96	Osceola, G.	Nev.	5,000,000	500,000	10	*
97	Overman, G. S.	Nev.	11,520,000	115,200	100	3,832,800 Dec. 1889 .25
98	Park, S.	Utah	2,000,000	200,000	10	.....
99	Peer, S.	Ariz.	10,000,000	100,000	100	165,000 Aug. 1890 .10
100	Peerless, S.	Ariz.	10,000,000	100,000	100	405,000 Aug. 1890 .15
101	Phœnix.	Ariz.	500,000	500,000	1	*
102	Phœnix, G. S.	Ark.	5,000,000	200,000	25	*
103	Phœnix Lead, S. L.	Colo.	100,000	100,000	1	*
104	Pilgrim, C.	Cal.	600,000	300,000	2	*
105	Potosi, S.	Nev.	11,200,000	112,000	100	1,573,000 Mar. 1890 .50
106	Proustite, S.	Idaho	250,000	250,000	1	*
107	Puritan, S. G.	Colo.	1,500,000	150,000	10	*
108	Quincy.	Colo.	3,000,000	300,000	10	.....
109	Rappahannock, G. S.	Va.	250,000	250,000	1	*
110	Red Elephant, S.	Colo.	500,000	500,000	1	*
111	Ropes, G. S.	Mich.	2,000,000	80,000	25	147,200 July 1887 .50
112	Russell, G.	N. C.	1,500,000	300,000	5	.....
113	Sampson, G. S. L.	Utah	10,000,000	100,000	100	288,157 July 1888 1.08
114	San Sebastian, G.	San S.	1,600,000	320,000	5	*
115	Santa Fe, C.	N. M.	5,000,000	500,000	10	.....
116	Santiago, G.	U.S.C.	400,000	200,000	2	*
117	Security, S.	Colo.	10,000,000	1,000,000	10	.....
118	Sheridan.	N. M.	2,000,000	200,000	10	.....
119	Silver Queen, C.	Ariz.	5,000,000	200,000	25	*
120	South Bulwer, G.	Cal.	10,000,000	100,000	100	100,

NEW YORK MINING STOCKS QUOTATIONS.

DIVIDEND-PAYING MINES.

Name and Location of Company.	Nov. 1.		Nov. 3.		Nov. 4.‖		Nov. 5.		Nov. 6.		Nov. 7.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Adams, Colo.													
Alice	2.25	2.10											1,200
Atlantic, Mich									16.75				50
Belcher, Nev													
Belle Isle													
Bodie Cons., Cal													
Bos. & Mont., Mont													
Breece, Colo													
Bulwer, Cal													
Caledonia	1.05	1.00	1.00	.95			.92	.85	.75				2,500
Calumet & Hecla, Mich									275½				20
Catalpa, Colo													
Chrysolite, Colo													
Confidence, Nev													
Cons. Cal. & Va., Nev													
Crown Point, Nev			2.75				2.85		2.85				400
Deadwood, Dak													
Dunkin, Colo													
Eureka Con													
Father de Smet, Dak													
Franklin											15.50		30
Freeland, Colo													
Gould & Curry, Nev	2.35								2.40				200
Hale & Norcross, Nev													
Holyoke							.02						500
Homestake, Dak							9.13						100
Horn Silver, Utah			3.45	3.35			3.45		3.45		3.40		575
Independence, Nev													
Iron Hill, Dak													
Kearsarge									11.63				100
Leadville C., Colo	.17		.17				.17						2,500
Little Chief, Colo	.33										.33		300
Mono, Cal													
Moulton, Mont													
Mt. Diablo, Nev													
Navajo, Nev													
N. Belle Isle, Nev													
Ontario, Utah	40.00						40.00		40.13	40.00			165
Ophir, Nev	4.40								4.75		4.50		300
Osceola, Mich									35.63				100
Plymouth, Cal													
Quicksilver, Pref	42.00	40.00							40.00				410
" Com	7.13						7.50		7.00				500
Quincy, Mich													
Robinson Cons., Colo													
Savage													
Sierra Nevada, Nev			2.20								2.95		200
Silver Cord			.40				.40		.40				5,100
Silver King, Ariz							.80						75
Silver Mg. of L. V													
Small Hopes	.90												200
Standard													
Stormont, Utah													
Tamarack, Mich													
Yellow Jacket, Nev													

NON-DIVIDEND-PAYING MINES.

Name and Location of Company.	Nov. 1.		Nov. 3.		Nov. 4.‖		Nov. 5.		Nov. 6.		Nov. 7.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Alpha, Nev													
Alta, Nev	1.75		1.55						1.50		1.50		500
American Flag, Colo													
Andes, Nev													
Amador, Cal													
Astoria, Cal	.06		.05				.05		.07	.06	.07	.06	5,700
Barcelona, Nev													
Best & Belcher, Nev											3.25		100
Bonanza King, Cal													
Brunswick, Cal			.08				.08	.07	.08				3,200
Bullion, Nev	3.25												100
Butte & Bost., Mont													
Castle Creek, Idaho													
Cholar, Nev							3.80				3.40		0 20
Col. & Beaver, Idaho													
Commonwealth, Nev													
Comstock T., Nev			.16								.16		300
" bonds													
" scrip			.28										200
Con. Imperial, Nev							.45						300
Cons. Pacific, Cal													
Crescent, Colo													
Denver City, Colo													
El Cristo, Rep. of Col													
Exchequer	1.70										.78	.70	400
Hollywood, Cal													100
Huron, Mich													
Julia, Nev	.39		.38				.40		.30		.38		1,800
Justice, Nev													
Kingston & Pembroke													
Lacrosse, Colo													
Lee Basin, Colo													
Mexican, Nev			3.05										100
Minn. Iron Co													
Mutual Sm. & Mg. Co	1.50	1.45	1.50				1.45		1.50		1.50		1,400
Nevada Queen, Nev													
N. Commonwealth, Nev													
Occidental, Nev	1.80												500
Oriental & Mil., Nev													
Overman, Nev													
Phœnix of Ariz			.79	.75			.77	.76	.75				1,950
Phœnix Lead, Colo													
Potosi	7.00		6.75										300
Rappahannock, Va													
Santa Fe, Colo													
S. Sebastian													
Scorpion	.40		.40				.40		.40				1,900
Seg. Belcher, Nev													
Silver Hill													
Silver Queen													
Sullivan Con., Dak													
Sutro Tunnel, Nev													
Sutter Creek, Cal	1.25								1.20		1.15		500
Union Cons., Nev	2.95		3.00								2.75		300
Utah, Nev	1.15		1.15								1.15		500

* Ex. dividend. † Dealt in at the New York Stock Ex. Unlisted securities. ‡ Assessment paid. § Assessment unpaid. Dividend shares sold, 14,515. Non-dividend shares sold, 19,550. Total, New York, 34,065. ‖ Election Day.

BOSTON MINING STOCK QUOTATIONS.

Name of Company.	Oct. 31.		Nov. 1.		Nov. 3.		Nov. 4.*		Nov. 5.		Nov. 6.		Sales.
Atlantic, Mich	17.38	16.50	17.25	16.00	17.25	17.00			17.00	16.50	17.00		1,200
Bodie, Cal													
Bonanza Development													
Bost. & Mont., Mont	47.50	45.50	46.63	45.50	47.00	45.75			48.00	46.75	47.50	47.00	5,917
Breece, Colo			40										100
Calumet & Hecla, Mich	280	275	277½	275	274				274				109
Catalpa, Colo													
Central, Mich													
Chrysolite, Colo													
Con. Cal. & Va., Nev													
Dunkin, Colo	.70				.70								350
Eureka, Nev													
Franklin, Mich	16.75	16.00	17.00	16.50	17.00	16.90			17.25	16.25			1,349
Honorine, Utah													
Horn Silver, Utah													
Kearsarge			13.00		13.00	12.38			12.00	10.50	11.50	11.00	2,260
Little Chief, Colo													
Little Pittsburg, Colo													
Moulton													
Napa, Cal													
Ontario, Utah													
Osceola, Mich	35.50	35.00	35.00	33.75	35.25	33.75			35.25	34.00	37.00	35.00	5,805
Pewabic, Mich													
Quincy, Mich	90.00				85.00	80.00			80.00		81.00	77.00	244
Ridge, Mich									.75				200
Sierra Nevada, Nev													
Silver King													
Stormont, Utah													
Tamarack, Mich	160	153	160		158	157½			160	150	150		531
Tecumseh, Mich	2.50	2.00											50

Name of Company.	Oct. 31.		Nov. 1.		Nov. 3.		Nov. 4.*		Nov. 5.		Nov. 6.		Sales.
Allouez, Mich	4.50	4.25			4.44				4.50		4.50	4.25	1,695
Arnold, Mich													
Aztec, Mich													
Brunswick, Cal													
Butte & Boston, Mont	16.75	16.25			16.25	16.00							230
Centennial, Mich	17.00	16.50			16.25	14.00							1,147
Comstock T., Nev													
Copper Falls Mg													
Crescent, Colo													
Dana, Mich													
Don Enrique, N. M													
El Cristo, S. A													
Hanover, Mich													
Humboldt, Mich													
Hungarian, Mich													
Huron, Mich													
Mesnard, Mich													
National, Mich	1.50		1.25		1.63						1.50		400
Native, Mich													
Oriental & M., Nev													
Phœnix													
Pontiac													
Rappahannock, Va													
Santa Fe, N. Mex							.50	.48			.50	.43	.45	2,610
Shoshone, Idaho													
South Side, Mich													
Star													
Washington, Mich													
Winthrop, Mich													

* Election Day. Boston: Dividend shares sold, 18,115. Non-dividend shares sold, 6,082. Total Boston, 24,197.

COAL STOCKS.

Name of Company.	Par val. of shares.	Nov. 1.		Nov. 3.		*Nov. 4.		Nov. 5.		Nov. 6.		Nov 7.		Sales.
		H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
American Coal														
Cambria Iron														
Cameron Coal & I.Co														
Ches. & O. RR	100													
Chic. & Ind. Coal R'r	100													
Do. pref	100													
Col. C. & I	100	45⅞	45¾	45⅞	45¾			45¼	43½	43½	42¼	42	39⅞	5,095
Col. & Hocking C. I.	100	24⅝	24½	24⅝	24½			25	24			24		1,160
Consolidation Coal	100													
Del. & H. C	100	139	138¼					139½	139	138½	137¾	138½	135¼	2,944
D., L. & W. RR	50	143½	142¾	143¾	143			143⅞	142⅛	142⅜	140½	141	137⅞	72,602
Hocking Valley	100			29⅞	29½			30	29	28½	28	28½	27	4,405
Hunt. & Broad Top								22½						3
Do. pref				47½				47	46¾	46½	46			455
Illinois C. & Coke Co														
Lehigh C. & N	50	52		52	51¾			51⅞	51½	51½	51			479
Lehigh Valley RR	50	51⅜		51				51	50¾	50¾	50½			1,182
Lehigh & Wilk. Coal	100							20						100
Mahoning Coal	100													
Do. pref	100			114										30
Maryland Coal								16	15	17	16			930
Morris & Essex	100													
New Central Coal	50									10				200
N. J. C. RR	100	111¼		113½	111			113	111½	110½	109¾	109½	108	5,600
N. Y. & S. Coal	100													
N. Y., Susq. & West	100									7	6¾	6¾	6¼	900
Do. pref	100							28¾				25½	27	810
N.Y. & Perry C. & I	100													
Norfolk & West. RR.	50							17½		17		16		600
Do. pref	50	57¼		57¼	57			58	57¾	57⅜	55¼	55¼	53½	2,665
Penn. Coal	50													
Penn. RR	50	52⅛	52¼	52⅝	50⅞			51⅛	49¾	50¼	49⅞			8,893
Ph. & R. RR		35	33½	34¾	33¾			35	33½	34	33¼	33½	31½	**195,519
Sunday Creek Coal														
Do. pref	100													
Tennessee C. & I. Co								41¾	41	41	40¼	40	38	3,500
Do. pref														
Westmoreland Coal										65				10

*Election Day. **Sales in New York, 150,530; in Philadelphia, 44,989. Total sales, 308,082.

San Francisco Mining Stock Quotations.

Company.	Closing Quotations.					
	Oct. 31.	Nov. 1.	Nov. 3.	Nov. 4.*	Nov. 5.	Nov. 6.
Alpha						
Alta	1.70	1.40	1.80		1.40	1.40
Belcher						
Belle Isle	.80	.80	.80		.85	.90
Best & Bel	3.10	3.20	3.20		3.30	3.10
Bodie	2.15	2.20	2 05		1.90	1.80
Bulwer	.40	.45	.40		.40	.35
Challar	3.00		3.55		3.65	3.30
Com'wealth	2.50	2.50	2.50		2.65	2.50
Con. C. & V	4.25	4.35	4.40		4.30	4.20
Crown Point	2.60	2.60	2.70		2.70	2.60
D'lMonte, N'v						
Eureka C	4.00	4.00			4.00	4.60
Gould & C	2.25	2.25	2.35		2.25	2 15
Grand Prize						
Hale & N	1.80	1.90	1.90		1.90	1.80
M. White						
Mexican	2.90	2.90	2.85		2.95	2.85
Mono	1.30	1.15	1.10		1.00	.90
Mt. Diablo						
Navajo	.30	.30			.30	.35
Nev. Queen	.80	.80	.80		.80	.80
N. Belle Isle	1.40	1.40	1.45		1.40	1.50
N.Com'w'lth		1.30	1 55			
Ophir	4.10	4.55	4.55		4.50	4.35
Potosi	6.25	6.63	7.25		7.50	7.13
Savage	2.90	3.00	3.00		3.05	2.85
Sierra Nev	2.95	2.95	3.10		3.05	2.80
Union Con	2.80	2.90	2.80		2.80	2.60
Utah	1.05	1.05	1.05		1.05	1.00
Yellow Jak	3.00	3.10	3.10		3.05	2.90

* Election Day.

STOCK MARKET QUOTATIONS.

Baltimore, Md.

COMPANY.	Bid. L. H.	Asked. L. H.
Atlantic Coal	$	$1.50
Balt. & N. C.	.14@ .16	.16
Big Vein Coal	....	....
Conrad Hill	....	.10
Cons. Coal	.27	....
Diamond Tunnel	....	.40
George's Crk. C.	1.13	1.15
Lake Chrome	....	....
Maryland & Charlotte	....	....
North State	.10	....
Silver Valley	.73@ .95	.85@ .96

Prices bid and asked, lowest and highest, during the week ending November 6.

Birmingham, Ala.

COMPANY.	Bid. L. H.	Asked. L. H.
Ala. Coal & I. Co.	....	$100
Ala. Conn. C. & C. Co.	....	$23
Ala. R. Mill Co.	$60	....
*Alice Furnace	$103	....
Anna Howe G. Mg. Co.	$⅞	$⅞
Bessemer Land	$35@$35½	$35½
Bir. Mg. & Mfg.	$36	$48
Cahaba Coal Mg. Co.	....	$70
Camille Gold Mg. Co.	$⅛	....
De Kardeleben C. & I. Co.	$80	$85
Decat. L. Imp.	$12	....
Decatur Min. L.	....	$19
Ensley Land	....	$8¼@$9¾
*Eureka	**$99	$102½
Florence L. & Mg. Co.	$20	$21
Gadsen Land	$4¼@$4⅜	$4¾
Hecla Coal Co.	$10	....
Hen. S. & M. Co.	....	$60
Jagger-Townl'y C. & C. Co.	$8½	$10
Mag-Ellen	$100	....
Mary Lee C. & R. Co.	$25	....
Sheffield C. & I. Co.	$48	$50½
Sloss I. & S	$25	....
†Sloss I. & S	$90½	$92@$93
‡‡ Sloss I. & S.	....	$60
Tuscaloose C. I. & L. Co.	$22	....
Ten. C. & I. Co.	$11	....
" pref.	$90	....
Vulcan C. & C. Co	$5	....
Woodstock I. Co.	....	$30

Prices, highest and lowest, bid and asked during week ending November 3.

* Bonds. † First mortgage. ‡‡ Second mortgage. ** Without interest.

Pittsburg, Pa. Nov. 5.

COMPANY.	B.	A.	Closing
Allegheny Gas Co.	$39.00@	$40.00	$39.75
Bridgewater Gas Co.	40.00	.....	40.00
Chartiers Val. Gas	*25.00	*35.00	*29.00
Columbia Oil Co.	.....	.....	.....
Consolidated Gas Co.	.....	.....	.....
East End E. Light Co.	.....	60 00	60.00
East End Gas Co	.....	.....	.....
Forest Oil	.....	.....	.....
Hazlewood Oil Co.	51.00	.....	51.00
La Noria Mining	.19	.20	.20
Luster Mg. Co.	21.50	25.00	22.50
Mansfield C. & C. Co.	.....	.....	.....
Manuf'turers Gas Co.	19.00	.....	19.00
Nat. Gas Co. of W. Va	.....	.....	.....
N.Y.& Clev.Gas Coal.	*33.00@	*35.00	*34.00
Ohio Valley Gas.	20.00@	24.00	23.00
Pennsylvania Gas	.....	13.75	13.75
People's Natural Gas.	.....	30.00	30.00
People's N. G. & P. Co.	.....	.....	.....
Philadelphia Co.	*24.75	*25.75	*25.38
Pine Run Gas Co.	.....	.....	.....
Pittsburg Gas	75.00	.....	75.00
Silverton Mg. Co.	1.63	2.13	1.75
South Side Gas	.....	.....	.....
Tuna Oil Co.	.....	.....	.....
Union Gas	.....	.....	.....
Washington Oil Co.	85.00	95.00	85.00
W'house Brake Co	.....	74.00	74.00
W'house A. B. Co.	*112.00	*115.00	*112.50
W'house E. Light.	*27.88	*29.00	*28.50
W'moreland & Camb.	.....	15.00	15.00
Wheeling Gas.	*14.00	*15.50	*14.50
Yankee Girl Mg	.....	.....	.....

* Actual selling price.

Prices bid and asked and sales during week ending Nov. 5:

Chartiers Gas	20 shs.	@$30
N.Y.&Clev.GasCoal.	7 "	@$35
Philadelphia Gas Co.	275 "	$24¾@25⅝
West. Air Brake	15 "	@$113
West. Electric	50 "	@$28
Wheeling Gas	35 "	@$15

St. Louis. Nov. 5.

CLOSING PRICES.

COMPANY.	Bid.	Asked.
Adams, Colo.	$1.75	$2.00
American & Nettie	.82½	.87½
Aztec, N.Mex.	.06	.10
Bi-Metallic	....	35.00
Central Silver	.23¾	.25
Cleveland, Colo.	.04½	.05½
Cleveland & An'r.	.06	.08½
Coeur d'Alene	1.05	1.10
Elizabeth	....	....
Gold King	.08	.15
Granite Mountain, Mont.	45.50	46.00
Hope	....	....
Ingram	....	....
L. X. L. Colo.	....	....
La Union	.07½	.08¼
Little Albert	.14	.17½
Montrose Placer, Colo.	.45¾	.53¾
Major Budd, Mont.	.08⅛	.09⅛
Mexican Imp.	....	....
Mickey Breen.	1.80	1.85
Mountain Key	.43¾	.50
Nellie	....	....
Old Colony	....	....
Pat Murphy, Colo.	.11½	.12
Puzzle	....	....
Richmond Hill.	....	....
Samoa	....	....
Silver Age, Colo.	1.90	2 05
Small Hopes, Colo.	.87½	.92½
Tourtelotte	.01	.01½
West Granite, Mont.	.98¾	....
Wire Patch	.11½	.13
Yuma, Ariz.	.43¾	.50

Trust Stocks. Nov. 7.

The following closing quotations are reported to-day by C. I. Hudson & Co., members of New York Stock Exchange:

CERTIFICATES.	
Am. Cotton Oil. Tr. Repts	$16½@$17¾
Cattle Trust	...@ ....
Distillers' & Cattle Feeders'.	44¾@ 45
Linseed Oil	42¼@ 44
National Lead	171¼@ 175⅛
Standard Oil	164 @167
Sugar Refineries	57⅝@ 57⅝

Sales at the New York Stock Exchange week ending Nov. 7:

	Sales.	Price H.	Price L.
*American Cotton Oil	1,470	19¼	18¾
National Lead	41,470	19⅝	16⅞
Sugar	434,984	67¾	54½

* Trust receipts.

Foreign Quotations.

London. Oct. 25.

COMPANY.	Highest.	Lowest.
Almada, Mex.	1s. 3d.	9d.
Amador, Cal.	£7-16	£⅜
Appalachian, N. C.	9d.	3d.
Canadian Phos., Can.	£¼	£¼
Colorado, Colo.	3s. 6d.	3s.
Comstock, Utah.	....	....
Cordova	....	....
Cons. Esmeralda, Nev.	2s. 6d.	2s.
Denver Gold, Colo.	6d.	....
Dickens Custer, Idaho.	1s.	6d.
East Arevalo, Idaho.	2s.	1s.
El Callao, Venezuela.	£2	£1¾
Elmore, Idaho	2s. 6d.	2s.
Garfield, Nev	2s.	1s.
Jay Hawk, Mont.	1s. 6d.	1s.
Josephine, Cal.	1s. 6d.	1s.
Kohinoor, Colo.	2s. 3d.	1s. 9d.
La Luz, Mex.	1s. 6d.	1s.
La Valera, Mex.	20s.	15s.
Montana Lt., Mont.	21s.	20s.
New California, Colo.	6s. 6d.	6s.
New Consolidated	5d.	3d.
New Eberhardt, Nev.	1s. 3d.	9d.
New Emma, S. Utah.	3s. 9d.	3s. 3d.
New Flagstaff, Utah.	....	....
Newfoundland, N. F.	3s. 6d.	3s.
N. Gold Hill, N. C.	1s.	6d.
New Guston, Colo.	£3¾	£3½
New Hoover Hill, N.C.	1s.	6d.
Old Lout, Colo	£½	£⅜
Palmarejo, Mex.	15s. 6d.	14s. 6d.
Pinos Altos, Mex.	13s. 6d.	12s. 6d.
Pittsburg Cons., Nev.	8s. 6d.	7s. 6d.
Richmond Con, Nev.	£1	£¾
Ruby&Dunderb'g, Nev.	1s. 6d.	1s.
Sam Christian, N. C.	1s.	6d.
Sierra Buttes, Cal.	6s.	5s.
" Plumas Eur., Cal.	£11-16	£9-16
Sonora, Mex	1s.	6d.
United Mexican, Mex.	8s.	7s.
U. S. Placer, Colo.	1s. 3d.	9d.
Viola Lt., Idaho	1s. 6d.	1s.

Highest and lowest prices during the week ending October 25.

Paris. Oct. 23.

	Francs.
Belmez, Spain	775.00
Callao, Venez	52.00
Callao Bis., Venez	6.50
East Oregon, Ore	5.75
Forest Hill Divide, Cal	95.00
Golden River, Cal	400.00
" " parts	30.00
Lexington, Mont	120.00
" parts	4 00
Rio Tinto, Spain	630.00
Tharsis, Spain	151.25

CURRENT PRICES.

Those quotations are for wholesale lots in New York.

CHEMICALS AND MINERALS.

Acid—Acetic, ℔ 100 lbs. $1.75@$2.00
Muriatic, 18° ℔ 100 lbs. 1.00@1.50
Muriatic, 20° ℔ 100 lbs. 1.12½@1.75
Muriatic, 22° ℔ 100 lbs. 1.37½@2.00
Nitric, 36° ℔ 100 lbs. 4.00@4.29
Nitric, 42° ℔ 100 lbs. 6.00@6.25
Oxalic, ℔ 100 lbs. 6.50@10.50
Sulphuric, 60° ℔ 100 lbs. 80@1.25
Sulphuric, 66° ℔ 100 lbs. 1.00@1.75

Alkali—
Refined, 48 p. c. 2¾
Refined, 58°. 2¾@3
Alum—Lump, ℔ lb. 1¾
Ground, ℔ lb. 1¾@2
Lump ℔ ton, Liverpool £4 17 6
Sulphate of Alumina, ℔ ton £4 10
Ammonia—Sul., ℔ 100 lbs. 3.15
Carb, ℔ lb. 7½@8¼
Aqua Ammonia—18° ℔ lb. 4¾
20°, ℔ lb. 6
22°, ℔ lb. 6@7
26°, ℔ lb. 10@11
Ammoniates—Azotine, ℔ unit 1 95@ 2 00
Blood, dried, red, ℔ unit, west 1 80@ 1 90
low grade, ℔ unit 1 70@ 1 80
Concentrated tankage, ℔ unit 1 75@ 1 80
Bones, rough, ℔ ton 20 00@23 00
ground, ℔ ton. 25 00@28 00
Bone black, refuse, ℔ ton 17 50@19 50
Kieserite 6 00@ 6 50
Fish guano, dried 18 50@19 00
acidulated 10 00@— 00
wet 8 50@ 9 50
Phosphate rock, f.o.b Char'n— —@— —
undried —@ 6 —
dried 7 00@ 7 50
ground 8 00@11 50
Acid phosphate, 14% per unit. 72½@ 75
Arsenic—White, powdered ℔ lb. 3¼@3½
Red ℔ lb. 5¾@ ⅝
White at Plymouth, ℔ ton £12 2 6
Asbestos—Am., ℔ ton $50@$300
Italian, ℔ ton. c. i. f. L'pool £18@£60
Ashes—Pot, 1st sorts, ℔ lb. 4¾@4⅞
Pearl 6¼@6½
Asphaltum—P. ton 13.00
Prime Cuban, ℔ lb. 4½@5¼c.
Hard Cuban, P ton $28.00
Trinidad, refined, ℔ ton $30.00
Egyptian 8@9
Barium—Nitrate, ℔ lb. 8@8½
Baryies—Sulph., Am. prime white 17@20
Sulph., foreign, floated, ℔ ton. 19½@21.50
Sulph., off color, ℔ ton 11.50@14.00
Carb., lump, f. o. b. L'pool, ton £6
No. 1. Casks, Runcorn, " " £4 10 0
No. 2, bags, Runcorn, " " 3 15 0
Bleach—Over 35 p. c, ℔ lb. 1.57½@1.60
Borax—Refined, ℔ lb. 9½@9⅝
Concentrated 7¾@8¾
Refined " Liverpool ℔ ton £29
Brimstone—*See Sulphur.*
Bromine—℔ lb. 37@38
Chalk—℔ ton 1.75
Precipitated, ℔ lb. 4¾@5
China Clay—English, ℔ ton 13.50@18.50
Southern, ℔ ton 13.50
Chrome Yellow—℔ lb. 10@2
Cobalt—Oxide, ℔ lb. 2.60@2.90
Copper—Sulph. English Wks. ton £20@£21
Copperas—Common, ℔ 100 lbs. 70
Best, ℔ 100 lbs. 75@1.00
Liverpool, ℔ ton, in casks. £1 15s.
Cream of Tartar—Am. 99% 22½
Powdered, 99 p. c. 23
Emery—Grain, ℔ lb. 4½@5
Flour, ℔ lb. 2¾@3½
Feldspar—Ground, ℔ ton 15.00
Fuller's Earth—Lump, ℔ bbl. 90@95
Powdered, ℔ lb. 1⅞@2
Gypsum—Calcined, ℔ bbl. 1.25@1.50
Iodine—Resublimed 2.75
Kainit—℔ ton $9.75@$10
Kaolin—*See China Clay.*
Lead—Red, ℔ lb. 6¾@9
White, American, in oil, ℔ lb. 6¾@7¼
White, English, ℔ lb. 8½@8¾
Acetate, or sugar of, white 12@13
Nitrate 9@10
Lime Acetate—Amer. Brown 95@1.00
" Gray 1.75@1.87½
Litharge—Powdered, ℔ lb. 6½@6¾
English flake, ℔ lb. 9@9½
Magnesite—Greek, ℔ ton 20.00
Manganese—Crude, per unit. 23@28
Oxide, ground, per lb. 2½@6½
Mercuric Chloride—(*Corrosive Sublimate*) ℔ lb. 70@72
Metallic Paint—Brown per ton. $20@25
Red $20@25
Mineral Wool—℔ lb. 2
Mica—In sheets according to size.
1st quality, ℔ lb. 25@$6.00
Naphtha—Black 60
Ochre—Yellow, "B. F.," ℔ ton, f. o. b. mill 30.00
"J. F. L. S.," ℔ lb. ex dock 2½
Yellow 10@25
Rochelle 1.35@1.50
Washed Dutch 5@—
Washed French 1½@2½
Washed Nat Oxford, Lump 6½@6¾
Washed Nat Oxford, Powder 7@7½
Golden 3¾@4
Domestic 2¾@1½
Domestic, for O. C. & W. P. ⅝@1
Oils, Mineral—
Cylinder, light filtered 15@20
Dark filtered 14@21
Extra cold test —@—
Dark steam refined 10@18
Phosphate Rock—S. Carolina, per ton f. o. b. Charleston 6.00@7.25
Ground, ex vessel New York 11.00
Canadian Apatite, lump. f. o. b. at Montreal, ℔ ton 16.00
Phosphorus—℔ lb. 64@65
Precip., red 100@102
white 100@103
Plumbago—Ceylon, ℔ lb. 4@5
American, ℔ lb. 5@7
Potassium—Cyanide, ℔ lb. 39@40
Bromide, ℔ lb 33
Chlorate, English, ℔ lb. 11@14
Chlorate, powdered 13@14
Carb, ℔ lb. 4.70@5.54
Caustic, ℔ lb. 7½@8
Iodide 2.65@2.70
Muriate, ℔ 100 lbs. 1.77½@1.82½
Nitrate, refined, ℔ lb. 6@8
Bichromate, ℔ lb. 10½@11
Dble. m'ure salt, basis of 48@50% 1.12@1.20
Sulphate, basis of 90% ℔ 100 lbs. 2.02½@2.05
Yellow Prussiate 17½@18
Red Prussiate 42@45
Pumice Stone—Select lumps, lb. 3¼
Original cks., ℔ lb. 1¾@2
Powdered, pure, ℔ lb. 2¼@2'4
Pyrites—Non-cupreous, p. units 10d.
Quartz—Ground, ℔ ton 14.00@16.00
Rotten Stone—Powdered, ℔ lb. 3¼@3½
Lump, ℔ lb. 6@10
Salt—Liverpool, ground, ℔ sack 75@80
Turk's Island, ℔ bush 25@28
Salt Cake—℔ lb. 60@62½
Saltpeter—Crude, ℔ lb. 5¼@5½
Refined, ℔ lb. 6@8
Silex, ℔ ton 14@25
Soda—Carb Ash, 48% 8.90@1.55
" high test 1.50@1.55
Caustic, 48% 1.50@1.55
" high test — @ —
Newcastle, 48% — @ —
" high test 1.50@1.55
Bicarb, English 3.50@3.75
" American 3@3½
Crystal, carbonate 1.95@2.00
Caustic, 60% 3.40@5.50
" 70% 3.15@3.25
" 74% 3.15@3.25
" 77% 3.15@3.20
Sal, English 1.15@1.25
" American 1.10@1.15
Nitrate 1.80@1.85
Prussiate 17½@18
Phosphate 7@18
Stannate 8@10
Strontium—Nitrate, ℔ lb. 9@9½
Sulphur—Roll, ℔ lb. 1¾
Flour, ℔ lb. 20
Crude Brimstone, 2s., ℔ ton 22.00@23.00
Crude Brimstone 3d's, ℔ ton 20.50@21.50
Sylvinit, 23@27% S.F.P., per unit. 40@42½
Talc—Ground French, ℔ lb. 1¼@1½
Domestic, ℔ ton $18@$20
c. i. f. Liverpool, ℔ ton £4 5
Terra Alba—French 80@85
English 75@80
American, No. 1 —@—
American, No. 2 40@50
Tin—Crystals 15½@16
Muriate .8@ 3
Vermillion—American, ℔ lb. 61
English ℔ lb 82@85
Vitriol—(Blue), Ordinary, ℔ lb. 5½@5⅝
Extra, ℔ lb. 7
Zinc Oxide—Am., Dry, ℔ lb. 4½
Antwerp, Red Seal, ℔ lb. 6@6½
Paris, Red Seal, ℔ lb 6½@7
* Spot.

THE RARER METALS.

Aluminum—(Metallic), per lb. $1.50@$2
Sheet, per lb 2.50
Arsenic—(Metallic), per lb. .40
Barium—(Metallic), per gram 4.00
Bismuth—(Metallic), per lb. 2 75
Cadmium—(Metallic), per lb. 1.00
Calcium—(Metallic), per gram 10.00
Cerium—(Metallic), per gram. 7.50
Chromium—(Metallic), per gram. 1.00
Cobalt—(Metallic), per lb. 6.00
Didymium—(Metallic), per gram. 9.00
Erbium—(Metallic), per gram. 7.50
Gallium—(Metallic), per gram. 140.00
Glucinum—(Metallic, per gram. 12.00
Indium—(Metallic), per gram. 9.00
Iridium—(Metallic), per oz. 7.00
Lanthanum—(Metallic), per gr. 10.00
Lithium—(Metallic), per gram. 10.00
Magnesium Per lb. 4.50
Manganese—(Metallic), per lb. 1.10
Chem. pure, per oz. 10.00
Molybdenum—(Metallic), per gm .50
Niobium—(Metallic), per gram. 5.00
Osmium—(Metallic), per oz. 65.00
Palladium—(Metallic), per oz. 35.00
Platinum—(Metallic), per oz. 15.00
Potassium—(Metallic), per lb. 28.00
Rhodium—(Metallic), per gram. 5.00
Ruthenium—(Metallic), per gm. 5.50
Rubidium—(Metall'c), per gram. 2.00
Selenium—(Metallic), per oz. 1.80
Sodium—(Metallic), per lb. 2.50
Strontium—(Metallic), per gm. .60
Tantalium (Metallic), per gram. 9.00
Telurium—(Metallic), per lb. 5.00
Thallium—(Metallic), per gram 25
Titanium—(Metallic), per gram. 2.25
Thorium—(Metallic), per gram. 17.00
Tungsten—(Metallic), per oz. 2.25
Uranium—(Metallic), per lb. 5.00
Vanadium—(Metallic, per gm. 22.00
Yttrium—(Metallic), per gram. 9.00
Zirconium—(Metallic), per oz. 65.00

BUILDING MATERIAL.

Bricks—Pale, ℔ 1,000 3.50@4.00
Jerseys, ℔ 1,000 5.00@5.50
Up Rivers, ℔ 1,000 6.25@6.50
Haverstraw seconds, ℔ 1,000 5.50@6.00
Haverstraw firsts, ℔ 1,000 6.25@7.00
Fronts, nominal, ℔ 1,000
Croton 14.00@16.00
Wilmington 20.00@21.00
Philadelphia @22.00
Trenton @22.00
Baltimore
Building Stone—Amherst freestone, ℔ cu. ft. 95@1.00
Brownstone, ℔ cu. ft. 1.00@1.35
Granite, rough, ℔ cu. ft. 45@1.25
Granite, Scotch, ℔ cu. ft 1.00@1.15
Cement—Rosendale, ℔ bbl. 85@1.10
Portland, American, ℔ bbl 2.15@2.45
Portland, foreign, ℔ bbl. 2.40@2.60
Portland, " special brands 2.60@2.85
Roman, ℔ bbl 2.75@2.90
Keene's coarse, ℔ bbl. 4.50@5.50
Keene's fine, ℔ bbl. 7.25@8 50
Slate—Purple and green roofing, ℔ 100 ft. 7.00@7.50
Red roofing, ℔ 100 sq. ft. 12.00
Black roofing, ℔ 100 sq. ft. 4.25@5.50
Lime—Rockland, common, ℔ bbl 1.10
Reckland, finishing, ℔ bbl. 1.20
St. John, com. and finish., ℔ bbl. 90@ 95
Glens Falls, com. and fin., ℔ bbl. 85@1.10
Labor—Ordinary, ℔ day. 1.50@2.00
Masons, ℔ day 4.00
Plasterers, ℔ day 4.00
Carpenters, ℔ day 3.50
Plumbers, ℔ day 3.50
Painters, ℔ day 2 50@3.50
Stonesetters, ℔ day 3.50@4.00
Tilelayers, ℔ day 3.50@4.50
Bricklayers, ℔ day 4.00